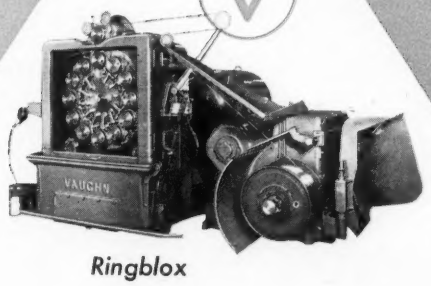
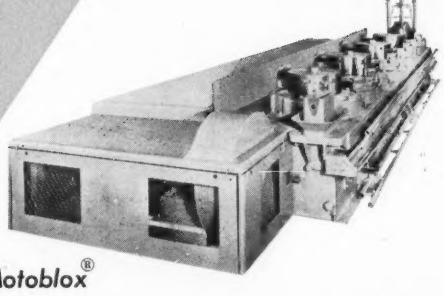
WIRE
AND WIRE PRODUCTS
SEPTEMBER 1950

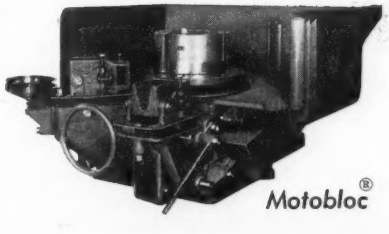
VAUGHN®



Ringblox



Motoblox®



Motobloc®

WIRE DRAWING MACHINERY

...on the basis of PERFORMANCE!

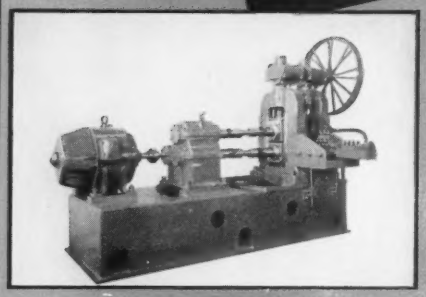
The VAUGHN MACHINERY CO.
CUYAHOGA FALLS, OHIO U. S. A.

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys

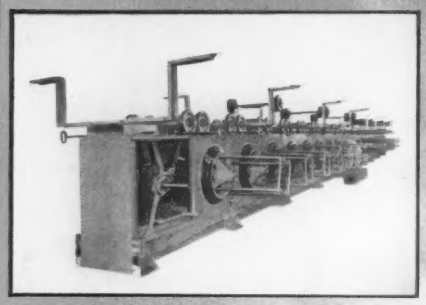
OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION

LOOK TO Wean FOR WIRE MACHINERY

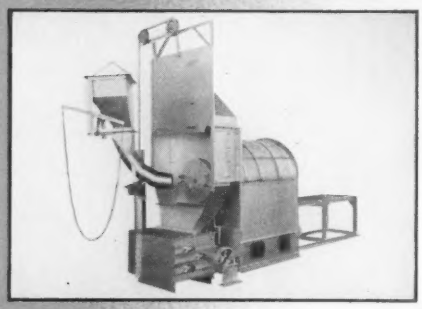
Process OR *Product*



2—Hi Wire Flattening Mill



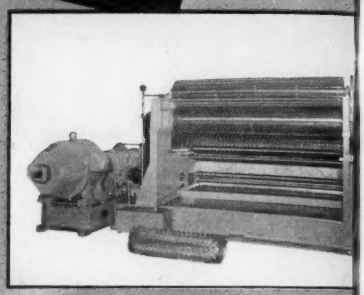
Wire Galvanizing Take-Up Frame



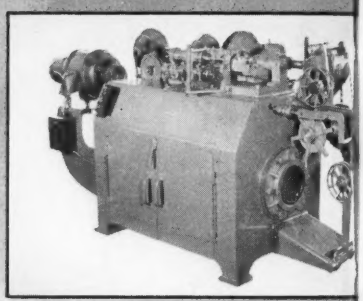
Nail Galvanizing Unit

In the past few years tremendous progress has been experienced in the field of wire machinery. Production speeds have been tripled and quadrupled. Product quality has been greatly improved. Machines have been made easier to operate and maintain.

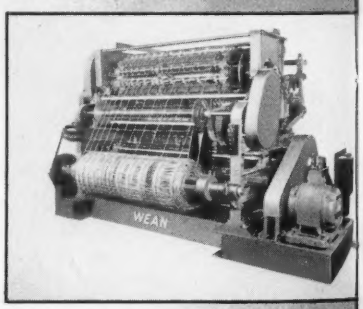
The Wean Equipment Corporation has been a large contributor to this advancement. Wean wire mill specialists have designed, built, and installed wire mill equipment for the leading wire producers the world over. If you make wire you should look to Wean for the best in machinery, service, and facilities.



Hexagon Netting Machine



2 or 4—Point Barbed Wire Machine



Hinge — Joint Fence Machine

NARROW STRIP MACHINERY

(FOR 36" WIDTHS OR NARROWER)

Wean *Equipment Corporation*

CLEVELAND, OHIO

CARBOLOY flat wire rolls outlast steel 48–1

—large eastern mill reports

Setup time reduced 6 to 1; more uniform wire produced with superior finish

Think of it!—In a large eastern rolling mill, 6" flat wire rolls of Carboloy cemented carbide have been in use over one year, 24 hours per day, 5 days per week—and it has not been necessary to regrind them to date.

Here are more benefits

You'll find these other production figures interesting, too. Look at this:

- **Spot changes,** twice a week with steel, now only every six months—outlasting steel at a ratio of 48 to 1.
- **Setup time** cut from two hours every month with steel rolls to two hours every six months with Carboloy.

Carboloy has brought increased production, longer roll life and lowered manufacturing costs to this eastern mill. Rolling high and low carbon steel wire for bobby pins, stitch and spring wire and similar products, they *know* Carboloy rolls are good.

Why not find out for yourself how much good, savings-wise, Carboloy flat wire rolls can do in your mill. Write today for further information. Carboloy Company, Inc., 11171 E. 8 Mile Street, Detroit 32, Michigan.

With Carboloy, you'll get all these advantages in your flat roll operations:

- **Less down time for spot changes and setup**
- **Longer roll life**
- **Better product finish**
- **Less regrinding down time**
- **Increased production**

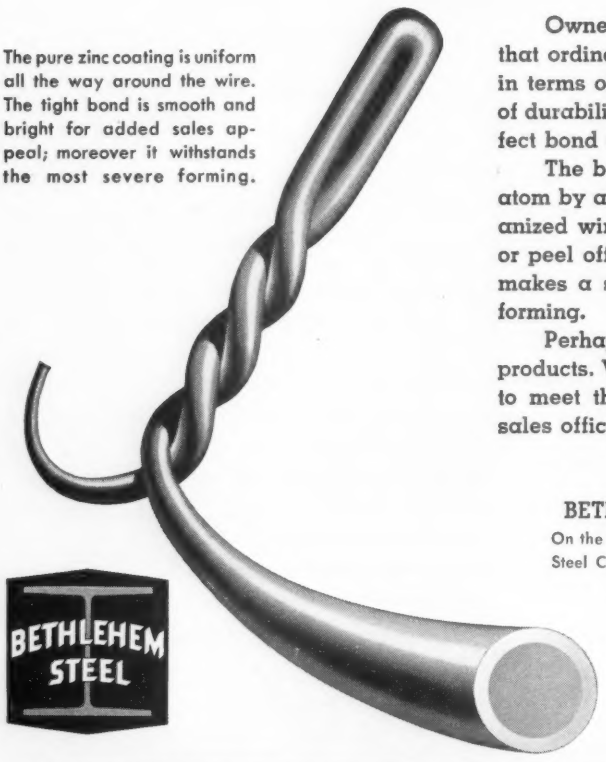
CARBOLOY®

CEMENTED CARBIDE

Atlas chain-link fence has a strong, durable construction that makes it popular for industrial properties, playgrounds, parking lots, estates, homes. Bethanized wire assures long life, even where there are corrosive elements in the atmosphere. Photo courtesy: Atlas Fence Co., Philadelphia.

BETHANIZED WIRE

for chain-link fence that L·A·S·T·S



The pure zinc coating is uniform all the way around the wire. The tight bond is smooth and bright for added sales appeal; moreover it withstands the most severe forming.

Owners of chain-link fence made from bethanized wire know that ordinary zinc coatings just can't compare with bethanizing in terms of service life. Bethanized wire adds many long years of durability to wire products because of the uniformity and perfect bond of its protective zinc jacket.

The bethanizing process deposits pure zinc electrolytically, atom by atom, on the clean surface of the steel wire. Bend bethanized wire, twist it, wrap it, or draw it—the zinc won't crack or peel off. Besides locking out corrosion, the 99.9-pct-pure zinc makes a smooth, ductile coating that stands up under severe forming.

Perhaps bethanized wire would be ideal for one of your products. Various coating weights and tempers can be produced to meet the exact requirements of specific uses. Our nearest sales office will give prompt attention to your request for facts.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

WIRE & WIRE PRODUCTS, Vol. 25, No. 9, September, 1950. Publication Office at One Sherman Ave., Jersey City, N. J. Executive Office 300 Main Street, Stamford, Conn. Published monthly by the Quinn-Brown Publishing Corp., Richard E. Brown, President; R. S. Spengel, Secy. and Treas. Subscription price: U. S. $5.00; Canada, $5.00 per year; 50 cents per copy; Foreign, $7.50 per year. Entered as second class matter, January 10, 1949, at the Post Office, Jersey City, N. J., under Act of March 3, 1879.

Quality that saves money...that's why

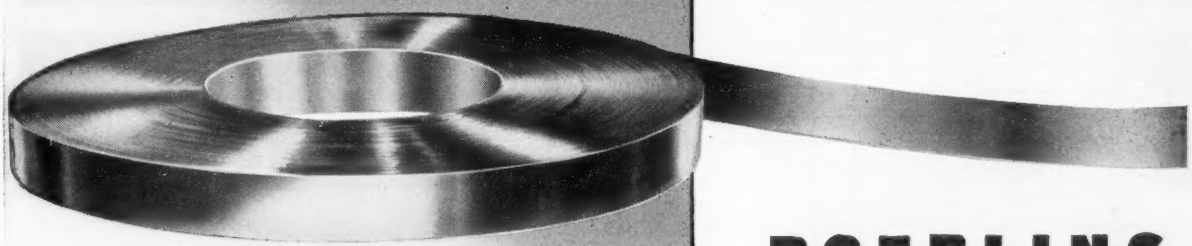
Today it's Roebling!

for Cold Rolled Spring Steel

JUST PUT IT on one basis . . . *dollars and cents!* If you cut down preparation time, you save money. If you cut down machine stoppages and rejects, you save still more. And you'll make *all* these savings with Roebling Cold Rolled Spring Steel because it's dimensionally accurate . . . absolutely uniform in physical properties and structure . . . one inch just like every other inch.

Roebling Cold Rolled Spring Steel is available annealed, hard rolled untempered; scaleless tempered; tempered and polished; tempered, polished and strawed, or tempered, polished and blued.

Have your Roebling Field Man help you select the cold rolled spring steel—or the round, flat or shaped wire—that will help improve both your product and your production, and give you genuine economy. John A. Roebling's Sons Company, Trenton 2, New Jersey.



Roebling has one of the largest specialty wire mills in America. Special techniques and the most modern precision machines assure a product that brings you faster, smoother operation.

ROEBLING

A CENTURY OF CONFIDENCE

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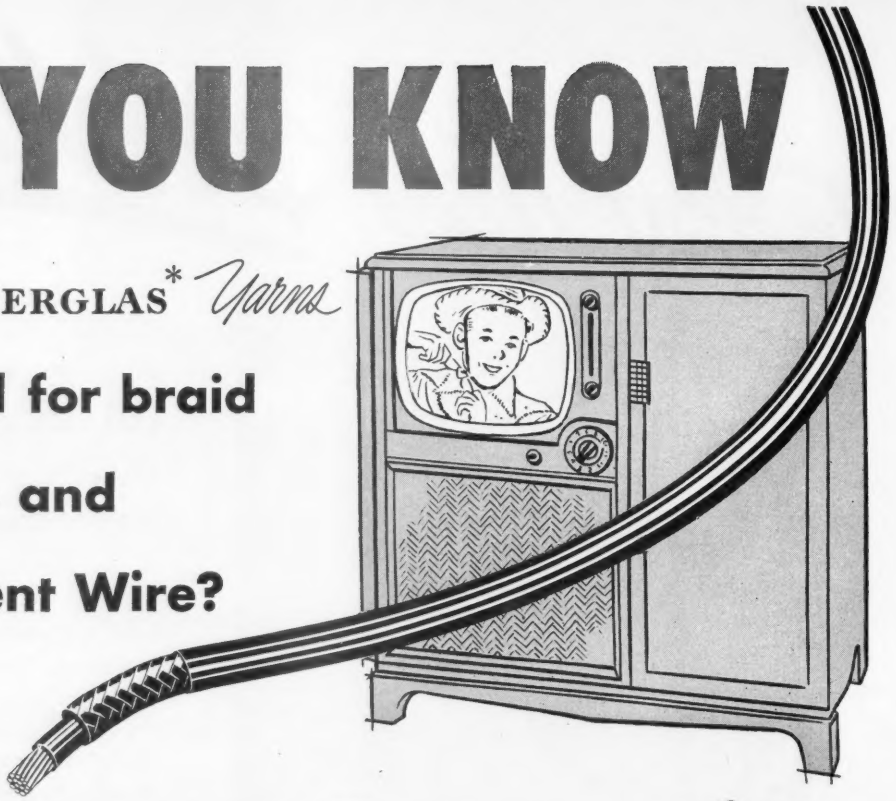
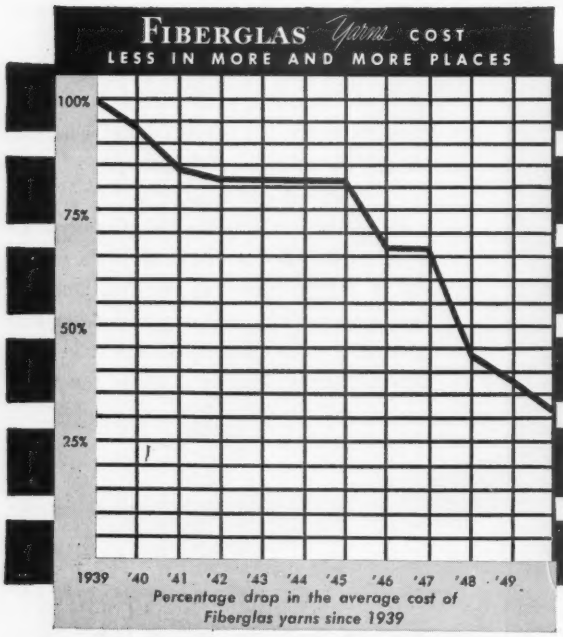
DO YOU KNOW

why FIBERGLAS* *Yarns* are used for braid in Radio and Instrument Wire?




FIBERGLAS Yarns COST
LESS IN MORE AND MORE PLACES
100%
75%
50%
25%
1939 '40 '41 '42 '43 '44 '45 '46 '47 '48 '49
Percentage drop in the average cost of Fiberglas yarns since 1939

FIBERGLAS *Yarns*

- ***WILL NOT BURN*** ...give extra protection in soldering
- ***WILL NOT ROT***
- ***HAVE EXCELLENT BRAIDING EFFICIENCIES***
- ***HAVE GREAT TENSILE STRENGTH***
- ***GIVE SMALLER DIAMETER*** ...plus good deformation resistance
- ***ARE LOW IN COST!***

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

For complete information about Fiberglas yarns for this and other uses write Owens-Corning Fiberglas Corp., Electrical Sales Division, Dept. 875, 16 East 56th Street, New York 22, N. Y.

OWENS-CORNING FIBERGLAS *Yarns*

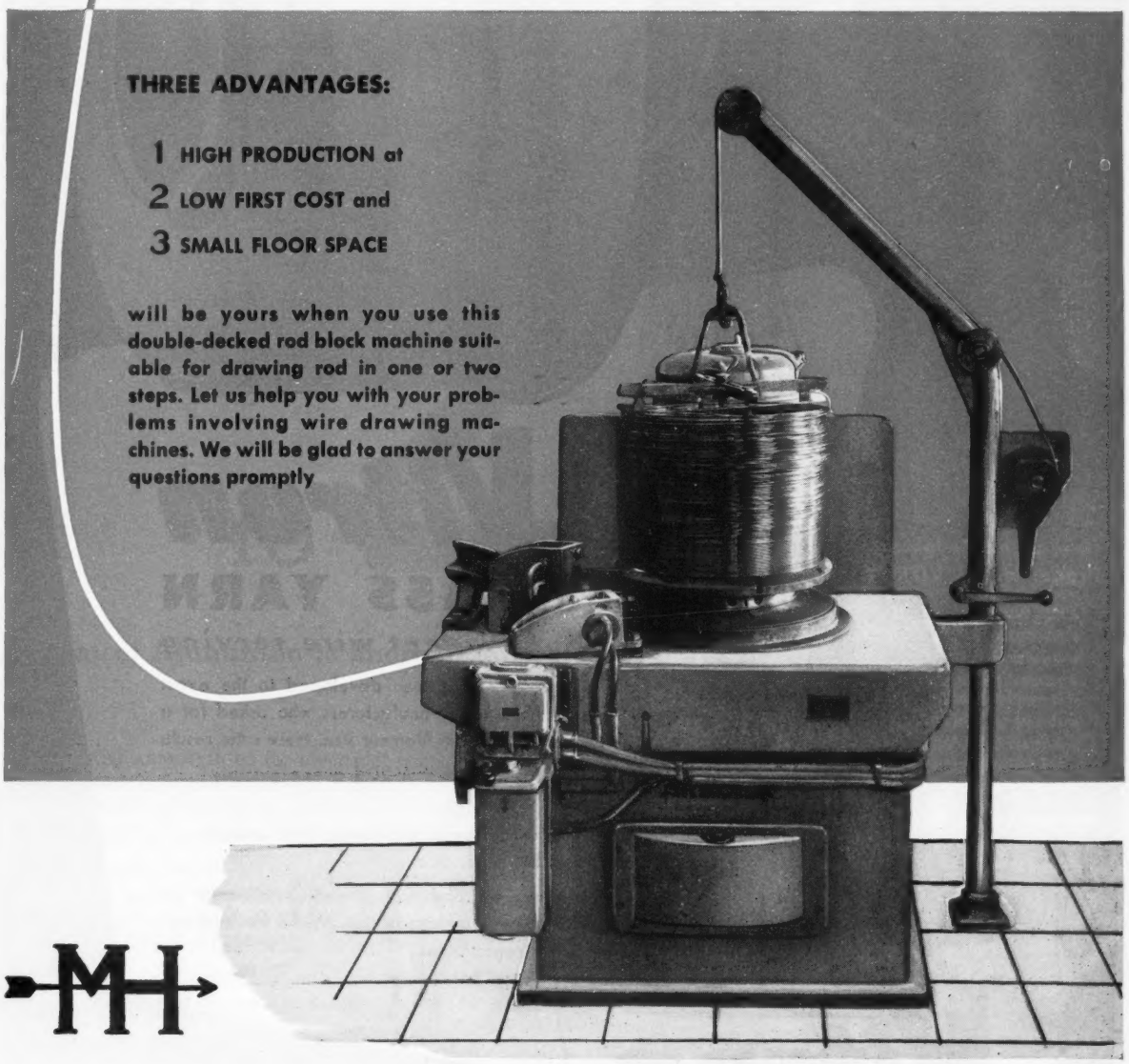
FIBERGLAS IS IN YOUR LIFE...FOR GOOD!

Wire drawing machines

THREE ADVANTAGES:

1 HIGH PRODUCTION at
2 LOW FIRST COST and
3 SMALL FLOOR SPACE

will be yours when you use this double-decked rod block machine suitable for drawing rod in one or two steps. Let us help you with your problems involving wire drawing machines. We will be glad to answer your questions promptly



MH

MORGÅRDSHAMMAR

MORGÅRDSHAMMARS MEK. VERKSTADS AB · MORGÅRDSHAMMAR · SWEDEN

New Low-Twist Vitron

300 GLASS YARN

cuts cost of magnet wire serving

VITRON 300 Glass Yarn has been developed to the exact specifications of magnet wire manufacturers who asked for a low-twist glass yarn of medium filament size. Here's the result:

Direct cost savings of more than 20% over previously used 900 and 450 yarns.

Improved edgewise bend resistance and smooth finish with less build-up.

This product improvement and cost saving can easily be applied to your magnet wire production. Write for information and engineering consultation.

Here are the Performance Properties of VITRON

- high strength
- withstands 1000° F.
- dimensionally stable
- excellent electrical properties in minimum space
- absorbs no moisture
- resistant to rot, mildew, oils and most acids
- easily impregnated or coated

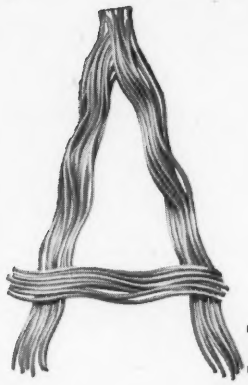
Will these qualities improve your product? If so, we'd like to help you profit from them.

Vitron®
GLASS FIBER

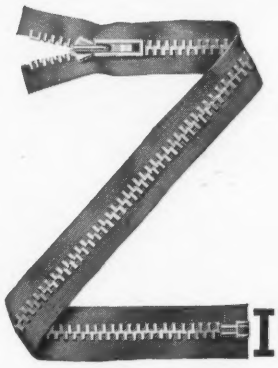
ELECTRICAL INSULATING MATERIALS

GLASS FIBERS INC. · WATERVILLE, OHIO

PHONE: WATERVILLE 2201



FROM ARMOR RODS



TO ZIPPERS

Kaiser Aluminum is another dependable source of rod, bar and wire.

FROM ARMOR RODS for electrical transmission lines, to zippers for women's dresses . . . manufacturers of almost every type of rod, bar and wire product depend on Kaiser Aluminum.

For good reasons . . .

Operating the most modern facilities, Kaiser Aluminum's Newark, Ohio plant produces rod, bar, and wire of unsurpassed quality.

And this quality is backed by dependability. For Kaiser Aluminum is completely integrated, from bauxite processing to final production of rod, bar and wire.

A nationwide network of warehouse distributors, handling diversified mill stocks, assures you immediate delivery.

Working with them — and for you — is an experienced staff of engineers eager to tackle your problems.

A call to any office listed below will put us on the job for you — *now!*

Kaiser Aluminum

SOLD BY KAISER ALUMINUM & CHEMICAL SALES, INC., KAISER BUILDING, OAKLAND 12, CALIF. . . . OFFICES IN:
Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles
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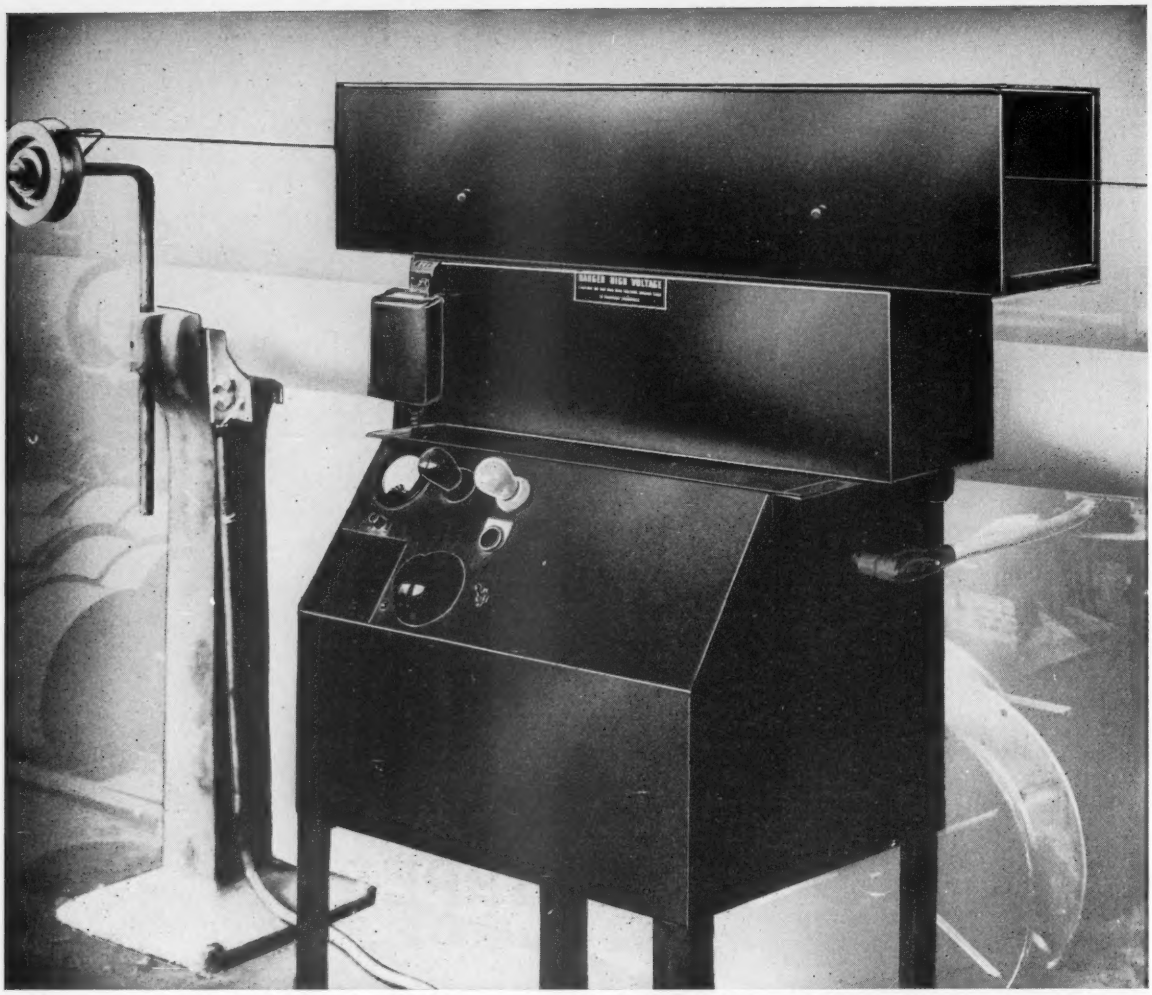
Wichita • EXPORT OFFICE, OAKLAND, CALIFORNIA • WAREHOUSE DISTRIBUTORS IN PRINCIPAL CITIES



DAVIS SPARK TESTER INSTALLATION
FOR CONTINUOUS CURE AND PLASTIC EXTRUDER

The spark tester is equipped with a transformer which has a range of voltage from 3,000 to 16,000.

When a fault occurs the horn blows and the fault is registered on the resetable counter.

The fault relay will operate in less than 1/180th of a second and assures accurate location of the fault.

The operation of the Davis Spark Tester is not affected by wet wire.

Meets Underwriter's Laboratories' specifications for spark testing!

Write us today for detailed information!

DAVIS EQUIPMENT

THE R. L. DAVIS ELECTRIC CO., INC. • WALLINGFORD, CONN.

SPARK TESTERS • SPOOLERS • TAKE-UPS • CAPSTANS

Standard SCORES AGAIN!

With a New Wax Coating for Galvanized or Tinned Wire—
Standard No. 21 Wax.

PROTECTS BRIGHT FINISHES, LUBRICATES, PREVENTS RUST

No. 21 Wax provides several valuable features at low cost that help sell wire and that facilitate certain manufacturing operations:

1. It will preserve bright color and finish on galvanized and tinned wire for several months.
2. Used on regular galvanized wire in barb wire or fencing machines, it provides sufficient lubrication for the forming work.
3. Is water dispersible and can be used in water quench box or in separate tank following quench box. Best results in latter at about 180° F.
4. Imparts rust preventive quality. Used 1/4 of 1% solution with lime substitute coatings.
5. It also shows excellent results as a drawing lubricant in copper, liquor finished or galvanized wire drawing.

Standard compounds are made for every specialized wire drawing or cold forming requirement. Standardize with "Standard" — and be sure of good results.

Our new coating compound for rod bolt and rivet stock is an example. "Ebony" compound for copper and aluminum drawing is another. Try them!

Call or Write Headquarters or Any Standard Service Center:

INDUSTRIAL COMPOUNDS CO.
C. R. Mehl, President
1010 San Fernando Rd.
Los Angeles, California

INDUSTRIAL COMPOUNDS CO.
C. R. Mehl, President
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San Francisco, California

STANDARD INDUSTRIAL COMPOUNDS CO.
William Kinnery
Millbury, Massachusetts

STANDARD INDUSTRIAL COMPOUNDS COMPANY has pioneered most of the outstanding contributions to better wire drawing through better lubricants. Consult with any STANDARD representative for courteous, competent service.

wire drawing lubricants

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Cut Your Flat Wire Costs

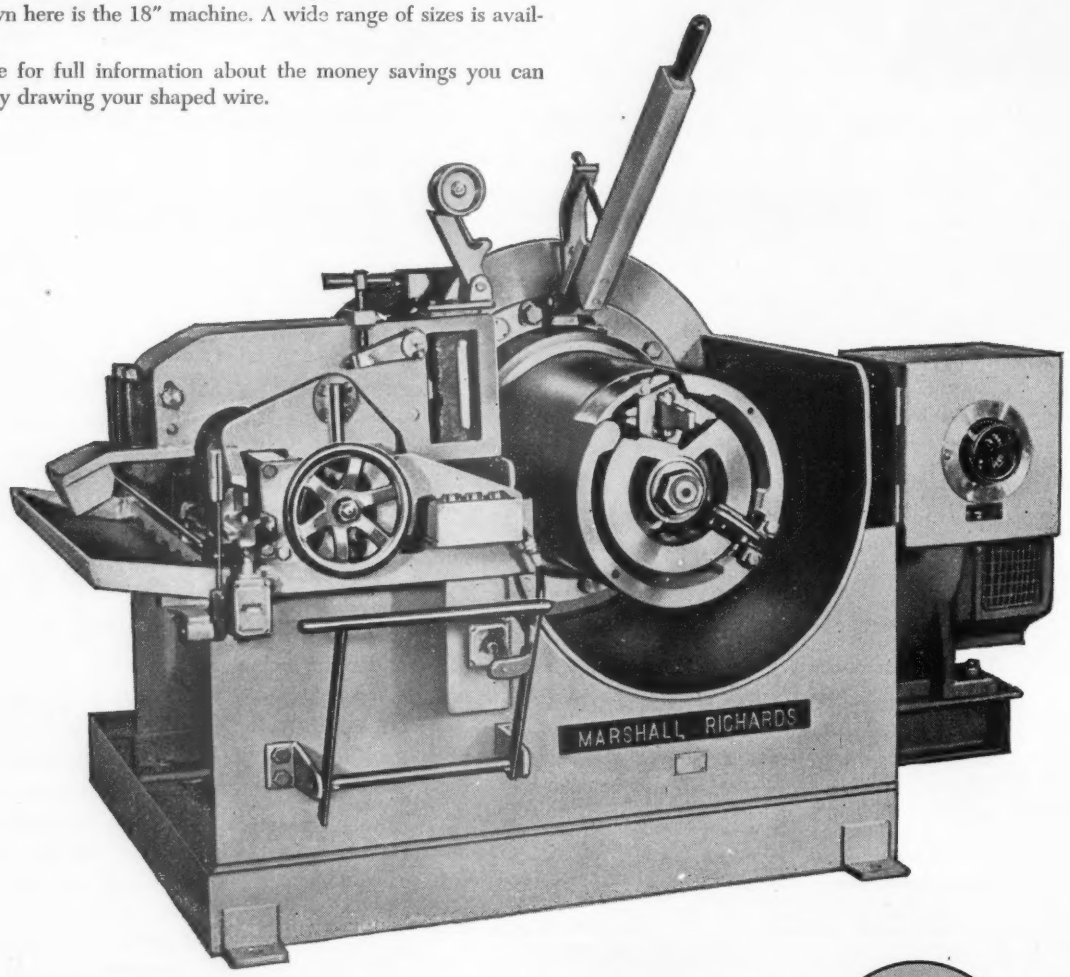
DRAW your shaped wire

YEARS OF EXPERIENCE in Europe have proved that you can not only save money by drawing flat and shaped wire but that you can work to far closer tolerances using Marshall Richards Horizontal Bull Blocks. Sections of all shapes can be drawn in spiral or pancake coils.

The pull-in gear design gives a completely smooth circumference... eliminates kinking when drawing pancake coils.

Shown here is the 18" machine. A wide range of sizes is available.

Write for full information about the money savings you can make by drawing your shaped wire.



MARSHALL RICHARDS MACHINE COMPANY, INC.

MARSHALL RICHARDS

1100 BROAD STREET, TRENTON 10, NEW JERSEY
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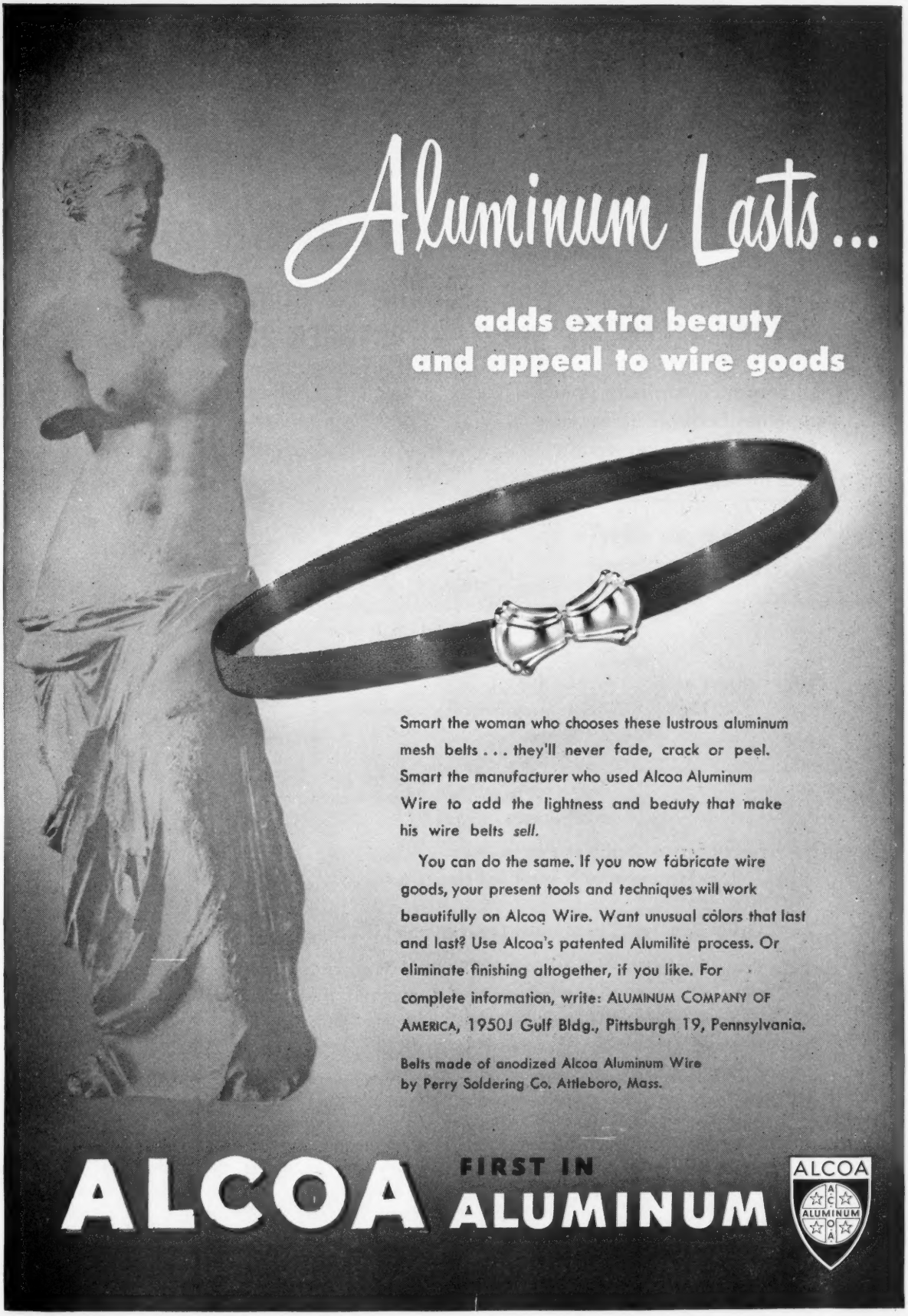

Aluminum Lasts...
adds extra beauty
and appeal to wire goods
Smart the woman who chooses these lustrous aluminum mesh belts . . . they'll never fade, crack or peel. Smart the manufacturer who used Alcoa Aluminum Wire to add the lightness and beauty that make his wire belts *sell*.
You can do the same. If you now fabricate wire goods, your present tools and techniques will work beautifully on Alcoa Wire. Want unusual colors that last and last? Use Alcoa's patented Alumilite process. Or eliminate finishing altogether, if you like. For complete information, write: ALUMINUM COMPANY OF AMERICA, 1950J Gulf Bldg., Pittsburgh 19, Pennsylvania.
Belts made of anodized Alcoa Aluminum Wire by Perry Soldering Co. Attleboro, Mass.
ALCOA
FIRST IN ALUMINUM
ALCOA
ALUMINUM

Be Seeing You ...

in Baltimore

AT THE ANNUAL WIRE ASSOCIATION CONVENTION — LORD BALTIMORE HOTEL — OCTOBER 23-26, 1950.

All wire men cordially invited! A program of unusual interest and breadth of scope has been set up by your Program Committee—meaty papers on a variety of ferrous and non-ferrous wire mill problems, surcease from the daily grind and tours through two big mills.

Non-Ferrous papers will cover:

Copper-base alloy wires.
Materials handling at Hawthorne Works.
Neoprene Jacketed Telephone Wires.
Manufacture of high tension cable.
Aluminum Rod and Tube Production.

Ferrous papers will treat of:

High carbon wire for prestressing concrete.
Steel wire testing.
New method of storing rods.
Stainless steel wire drawing.
Woven Wire fence manufacture.

Of interest to Ferrous and Non-Ferrous men:

Symposium on cleaning and coating compounds.

Other Features: The Annual Luncheon and the Stag Smoker-Dinner.

Plant Inspections: Point Breeze Works of Western Electric Company and Bethlehem Steel Company's Rod and Wire Mills at Sparrows Point. The trip will be by boat.

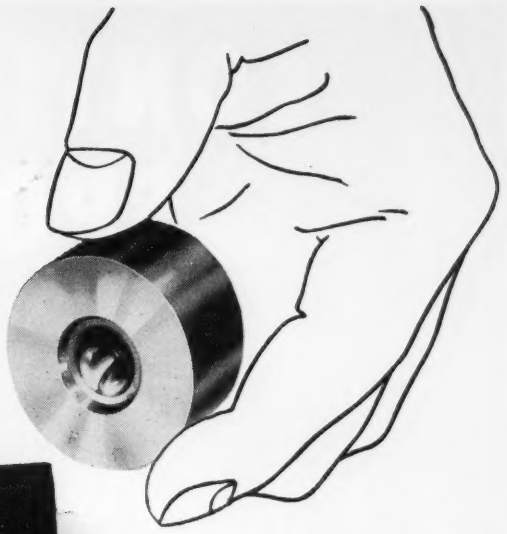
It is important to you as an individual and to your company that you attend this great meeting. Will you please arrange now to be there for all four days—make your reservations through this office for your hotel requirements.

THE WIRE ASSOCIATION

Richard E. Brown, Executive Secretary

300 Main Street Stamford, Conn.

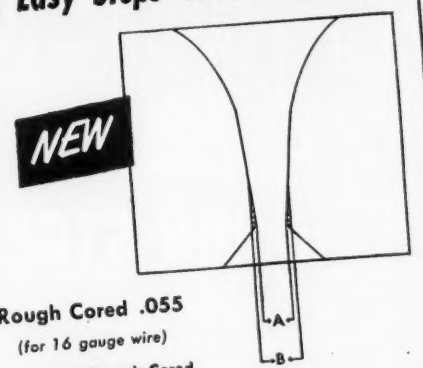
You Can Depend on Firthaloy for Improving Operating Economies



Faster Finishing Time
... with minimum work

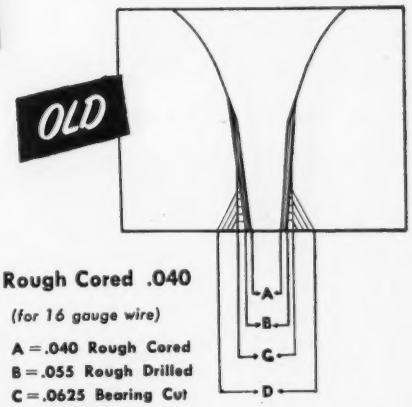
2 Finishing Steps Eliminated
... on sizes R-3, 4 & 5

2 Easy Steps with Firthaloy



Rough Cored .055
(for 16 gauge wire)
A = .055 Rough Cored
B = .0625 Finished

Twice as Many Steps in Finishing Old Style Dies



Rough Cored .040
(for 16 gauge wire)
A = .040 Rough Cored
B = .055 Rough Drilled
C = .0625 Bearing Cut
D = Back Relief

FIRTHALOY
SUPER-STANDARD FEATURES:

1. New, Higher nibs
2. Preformed back relief
3. Cored holes — all standard sizes
4. Carbide Locked in steel
5. Positive back-support for nibs
6. Advanced nib contour design
7. Precision manufacture
8. Complete assortment of Firthaloy grades
9. Firthaloy die engineering service
10. Immediate shipment from stocks

R-196

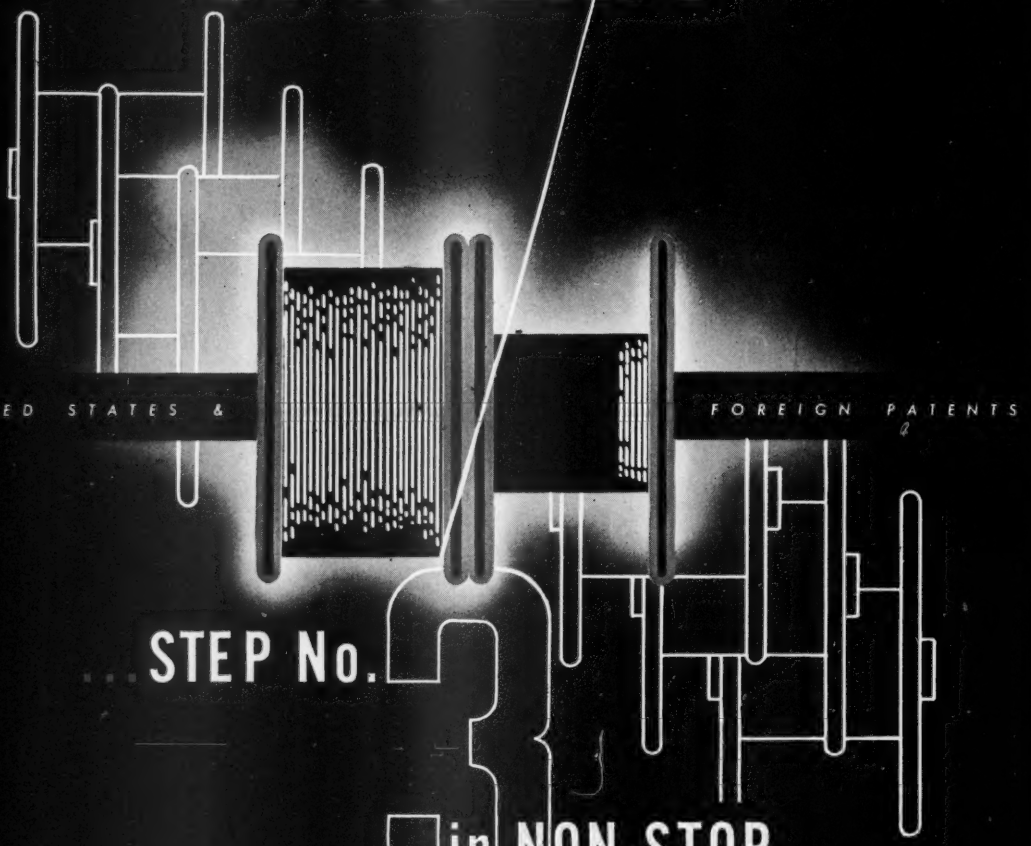
The new standards are typical of Firth Sterling's everlasting efforts to improve operating economies in wire mills. You can depend on Firth Sterling to help you produce Better, Faster and Cheaper.

Firth Sterling
STEEL & CARBIDE CORPORATION
McKEESPORT, PA.

OFFICES in Hartford, New York, Philadelphia, Pittsburgh, Cleveland, Dayton, Detroit, Chicago, Los Angeles, Birmingham.

In Canada:
Chapat Engineering Co., Ltd.
Hamilton, Ontario

CONTINUMATIC SPOOLING★...



UNITED STATES & FOREIGN PATENTS

...STEP No. 3 in NON-STOP...

1 CONTINUOUS ...DRAWING

2 CONTINUOUS ...ANNEALING

3★ CONTINUOUS AUTOMATIC ...SPOOLING

ENGINEERS ALL OVER THE WORLD ACCLAIM
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"I wasn't asleep," said the Dormouse

EVERY boy and girl knows the drowsy Dormouse of Alice in Wonderland. He was elbowed and pinched by the Mad Hatter and the March Hare as he mumbled in his sleep at the tea party.

But our young people aren't so well versed in everyday economics. They have a sadly distorted picture of the profits of business. They don't realize why profits are necessary, how small they are, or how they are divided.

For instance, in a recent survey of high school seniors, it was discovered that they believe over 50% of the sales dollar is profit and they think stockholders receive 24% of it. Actually business profit averages less than 8%, with less than 3% distributed as dividends. Business uses most of its profit, moderate as it is, for new plant and equipment, to improve products and to make more jobs.

Misconceptions among our youth bode ill for America's future. They open the door for too ready acceptance of dangerous isms and false foreign philosophies. Such misunderstanding of economics can be corrected only with facts supplied by business itself. You as a leader in your community must share this responsibility.

The American business man must not allow himself to be cast in the role of the Dormouse, pinched and pilloried by the March Hares of communism and the Mad Hatters of the "everything for nothing" state.

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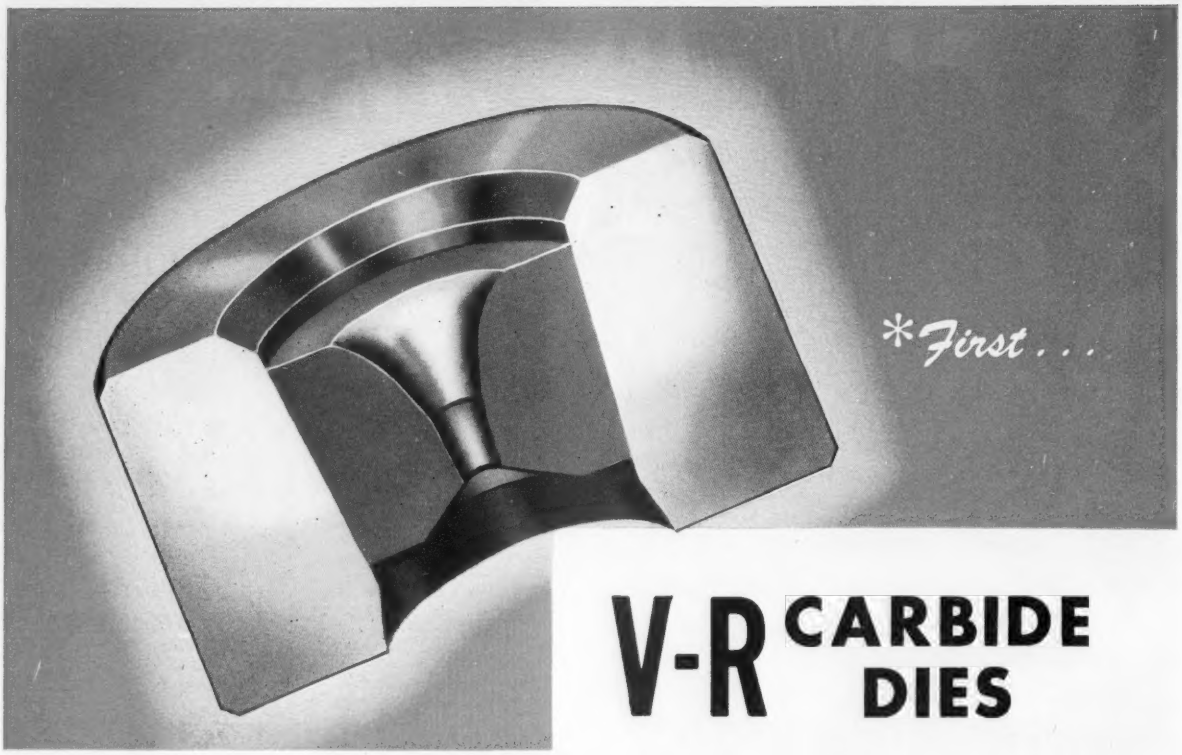

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The Wire Outlook

Business activity in all lines has taken a sharp upturn under the stimulus of increased buying for military needs and the rush of consumers to buy goods that they feel might become scarce.

Permissive control powers will probably be granted the President and while he has indicated that he is loath to use them, he is more than likely to before long. With controls is talk of a price roll-back, June 25th, the start of the Korean War, being the date most discussed. Wages and salaries should be frozen if and when price controls become operative.

Steel requirements for military needs have been taking only 1½% of the total. By the end of the year this should mount to 10% and early in 1951 rise to 15%. From there on, the percentage will depend upon Far East developments.

With all of this comes the renewed threat of another cycle of inflation. Wage demands, barring a freeze, will be large. Higher taxes are certain, income will go on rising and the supply of goods grow less. The defense bill for Korea and other probable outbreaks will cost us 25 billions a year for as far ahead as can be seen. The buying panic, however, is expected to taper off.

Russia will continue her peace offensive to embarrass Western powers, but keep up her warlike moves. In view of this, expensive preparations for war and war-time controls are a foregone conclusion. Drastic controls, however, are not necessary at this stage, but panic buying may bring them upon us earlier, if it is continued, than would otherwise be needed. It has been pointed out that a good "peace scare" could even precipitate a slide, but it is our opinion that we are now in this thing too deep for this to happen.

The basic metals, steel, copper and aluminum are probably the first that will be subjected to controls. Last year at this time electric wire and cable mills were beginning to emerge from a long period of poor business induced by falling prices. At this time they are tasting the joys of having more business than can be handled; but are facing the dilemma of a shortage of copper from which to make the wire to fill orders.

Curtailment of Chilean copper imports, strikes at mills of basic copper producers and heavy demand all contribute to the shortage. It would be hard to convince us that some of these factors are not induced by orders direct from Moscow to keep our basic supply situation muddled. It is high time that Federal and State governments clamped down hard on "fellow travelers" within our midst.

Most wire buyers are asking for increased tonnages. More finished wire products will be allocated by the mills in the fourth quarter to maintain equitable distribution. Nail buying has been heavy due to the boom in building and because of buying for inventory. In some parts of the country scare buying has swept them from the market.

Aircraft demand for wire will be heavier as new construction gets under way and that for the automotive industry should taper off around the end of the year, if the expected 25% cut-back in auto production materializes.

Upholstery spring wire demand has stepped up sharply and the bolt and nut industry, including a corresponding increase in demand for washers, is booming. Wire rope is more active and the same may be said of practically every wire item.

The tin market is in a turmoil due to London's announcement that it will stockpile this vital metal and cease to export it. The scramble for lead continues unabated.

Wisdom, temperance, and patriotism were never more needed. Now is the time for Washington to drop political boondoggling and pare down to essentials that will both win the war and keep us solvent.

—from the Editor's Desk.

On which of your wire machines are operating costs excessive?

Are these costs high due to low speed? . . . low efficiency? . . . operating too few per man? . . . high repair and maintenance expense? Whatever the cause these machines should be tagged for replacement at the first opportunity.

Why not let a Morgan engineer explain the extra benefits of replacing with Morgan-Connors? Let him help you work out a replacement program in keeping with your budget and production schedule.

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WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip, Wire and Rod Products and Insulated Wire and Cable.

DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

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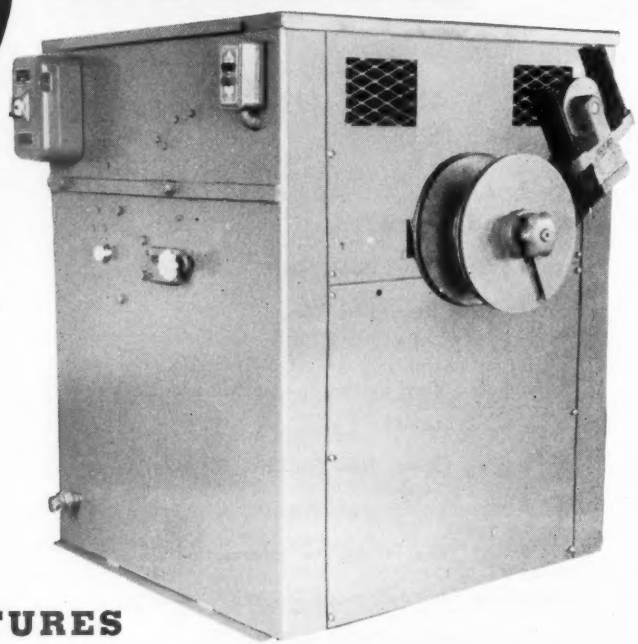

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WIRE
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A monthly publication devoted to the production of Wire, Rod and Strip.
DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

Vol. 25 SEPTEMBER, 1950 No. 9

Wire for Zippers

By Carl E. Blass, Manager of Planning
Talon, Inc.
Meadville, Pa.

One of the phenomenal industries that has grown with many heartaches in its early days to phenomenal proportions and success, is the slide fastener industry. Wire for these products requires special characteristics. Mr. Blass points out what is needed in wire to make a good "Zipper."

THE importance of wire to the zipper industry dates back to the original development by Talon, Inc., in 1914, of the so-called formed wire method of producing fastener chain (small metal "teeth" or scoops formed, cut off and attached to a pair of fabric tapes). Today, the zipper industry is one of the larger users of non-ferrous alloys in the United States. A considerable portion of this tonnage is in the form of round wire, with flat stock being next in importance. The zipper industry at present uses four basic alloys; namely, nickel silver, rich-low brass, aluminum and die cast metal. Nickel silver is composed of 65% copper, 18% nickel, and 17% zinc. Rich-low brass has a composition of 82%—85% copper, and except for allowable inclusions the remaining 15% to 18% is zinc. The third alloy is one of the aluminum-magnesium group. For die casting, Zamac—available in five different types—is most commonly used. The selection of the type Zamac to be used is based upon the process employed and the component parts to be produced, and in the nature of the case it varies in certain instances within a given product by component.

★ ★ ★

THROUGH years of experience the zipper industry has found that the question of analysis control can be left pretty much to the firms which supply non-ferrous wire products. Suffice to state, present day process and inspection procedures provide the zipper manufacturer with the high quality raw material required for the article. Hence, the zipper manufacturer can specify percent of reduction, grain size, exact temper and superficial hardness, knowing that the products delivered will embody the characteristics specified in the order.

★ ★ ★

THE fact that a high degree of ductility is desired in all cases and mandatory in certain specific instances, brings the requirement into the range of fine grain metal. The specific qualities of the different types of wire are shown separately.

★ ★ ★

THE formed wire process of producing fastener chain employed at Talon, Inc., requires round wire in the smaller dimensions from .060" to .200", rolled to commercial tolerances. This wire, particularly in the case of the copper alloys, must be held to very close grain size control to permit the required ductility needed for cold working the metal very close to its elastic limits. The advantage of very close grain size makes it possible to complete fabrication without expensive process anneal, the smaller grain size providing the necessary ductility.

★ ★ ★

THE surface of the metal must be clean and free from folds and inclusions. It is important that the wire be free from internal inclusions and stems. This wire is commercially available in coils weighing up to 200 lbs., which the zipper fabricator finds economical to handle. Generally speaking, this is not true of slit stock currently

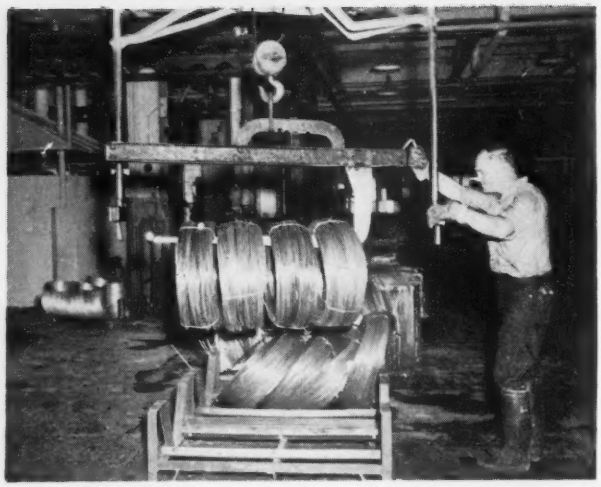


Fig. 1.—Annealed Wire after Cleaning.

Fig. 2.—Raw Material as Received.

being provided for the industry. While some improvement is in prospect, the effective use of larger coils is dependent upon improved material handling processes in both the metal and zipper industries.

★ ★ ★

THE surface condition must be favorable to breakdown rolling. During the process the metal is given a light acid dip to produce a fine etch, which provides a suitable surface for the different types of finish normally applied to zippers. The surface of the wire need not be capable of taking a finish or high polish. The value of the etched surface lies in the fact that better adhesion or bonding of applied final finishes, such as enamels or lacquers, is secured.

★ ★ ★

CHEMICAL compositions of metal used in making zippers must be closely controlled due to their critical effect on the color of the finish and on cold working properties, as well as the strength of the metal. Color is particularly important in the case of rich-low brass due to its relatively close appearance to gilt finish.

★ ★ ★

THE selection of alloy involves obtaining a metal which is corrosion-resistant under the wide range of conditions to which zippers are subjected. The greatest difficulty in this regard arises from the different chemical treatments employed in the manufacture of certain fabrics and leathers. It is a well-known fact that under certain conditions non-ferrous copper alloys will discolor when in contact with fabric, leather or other materials which have not been completely neutralized.

★ ★ ★

OF fundamental importance is the need for a clean, homogenous metal free from folds and inclusions, for the reason that defects of this nature at critical stress points in the finished formed wire adversely affect the strength of the finished product. It may be well to point out that the precision required for high quality zippers in many cases is in the range most commonly associated with our highest precision industries, many of which today far surpass the old standards previously associated

(*Please turn to page* 766)

Fig. 3.—Foreground—Finished Wire after Final Rolling. Background—Coils of Coined Slider Metal after Annealing.

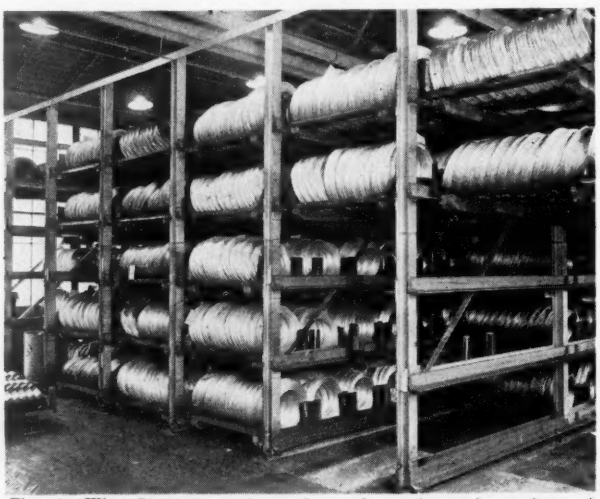
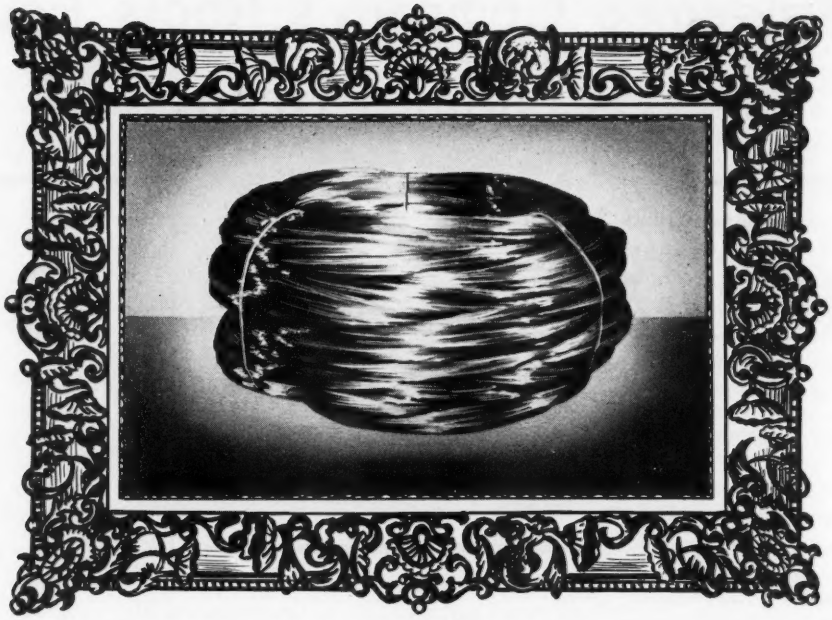


Fig. 4.—Wire Storage.



Now, *there's* a picture!

YES, there's a picture of perfectly drawn high carbon wire which can be yours for the asking.

To a man who knows his wire, this picture is more interesting than the famous Mona Lisa. She has been a mystery for a long, long time, because no one has ever been able to figure out her secretive little smile.

There's nothing mysterious about this picture, though. One look at those smooth, gleaming coils of wire tells you it was drawn with Magnus Metalcoat #267. How else could it be so clean, so free from rust and lime streaks?

How does your wire look when it comes from the mill? Do you have a tough cleaning job to do before you can electro-plate it, tin it, galvanize it, weld it, lacquer it, paint it, liquor-finish it, or whatever your finishing operation is? Then you are wasting time, energy and money, and in these days, that's serious!

Ask your wire mill to coat and draw your high or low carbon wire with Magnus Metalcoat #267. Both you, as the fabricator, and the wire mill, as the supplier, will benefit from the Metalcoat #267 process, for no other coating can give the perfect results that #267 does—day in and day out. Nothing else will produce such a fine finish, give such complete rust protection, such clean, dust-free working conditions, save so much time and money. No baking, consequently no fuel costs for bakers. No sull coating, another time-consuming, unnecessary operation eliminated. Very low consumption of lubricants, and a remarkable extension of die life.

These savings in the wire mill make it possible for them to furnish your wire coated and drawn with Metalcoat #267 at no higher cost to you. So, on your next order, SPECIFY MAGNUS METALCOAT #267. Or, if you wish, write and tell us your problems, and we shall be glad to work with your wire mill to help solve them.

Metal Coating Division

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Greening Company's Roots Four Centuries Deep

It is always an inspiration to note the progress of any concern over the years. This company's roots go back deeper than most of our new world enterprises, approximately four centuries, but if the truth were known, many other wire mills probably have many generations of antecedents stemming from across the Atlantic in days of yore. The story is written for the layman, but we hope will be none-the-less interesting to our technically-minded readers.

ALTHOUGH the manufacture of wire can be traced back to approximately 1700 B.C., it is only since the late middle ages that it has assumed any function other than that of pure ornamentation.

★ ★ ★

IN the genealogical history of the Greening family it is chronicled that in the year 1563 one Christopher Greening arrived in England from France, where, at St. Omer (near Calais) he had successfully established the first needle factory in France and possibly the first in Europe. On his return to England (for he was an Englishman originally) he established a wire-drawing works and needle factory at Tintern Abbey in Monmouthshire, Wales. (The trade did so well that Charles I placed an embargo on the importation of needles.) In the reign of James II a charter was granted to the Tintern Abbey Iron Works, one of whose founders was named Greening. One of his descendants, John Greening, resided and worked in the wire-drawing trade in Tintern Abbey during the middle of the Eighteenth Century. In 1798 his son, Nathaniel, moved to Warrington, Lancashire, and after starting up for himself in the wire-drawing trade, subsequently formed with a Mr. Rylands a partnership known as Greening and Rylands; this partnership continued until 1840 when it was dissolved and Nathaniel Greening (1769-1860) formed with his sons the firm of N. Greening & Sons.* Mr. Rylands in his turn formed the firm of Rylands Brothers Limited; both these firms are now well known and very large in their own respective lines in England. Nathaniel Greening's second son, Benjamin (1812-1876) learned his trade with his father and subsequently moved to Manchester where he carried on under his own name. Wishing to retire from business life, Benjamin Greening emigrated to Canada in 1858 and settled in Hamilton, Ontario, but when a suspension bridge blew down and a bid for tenders on telegraph and signal cord was issued by the Great Western Railway Co. (which also owned the bridge) the call was too great to be resisted. Greening took on a contract to manufacture the signal cord, using the wires taken from the bridge suspension cables and shortly afterwards formed B. Greening and Co. to carry out the manufacture of Wire Rope, Screens, Guards, Ornamental Iron and Wire Work, and, of course, the drawing of wire.

* The first power-loom used in wire-weaving was installed in N. Greening & Sons' works.

★ ★ ★

THUS was formed in Hamilton, Ontario, in the year 1859, Canada's first company to manufac-

Fig. 1.—Early View of the Plant, about 1889. * * * * *

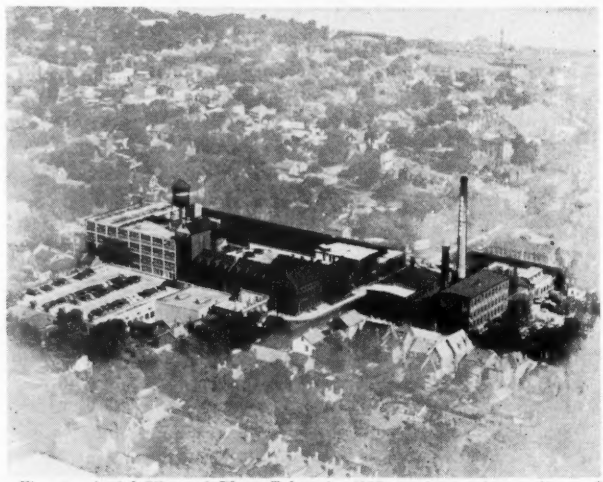

Fig. 2.—Aerial View of Plant Taken in 1947. * * * *

ture Wire Rope, Wire Cloth and Wire Screens.

★ ★ ★

FOR twenty years, until his death in 1879, Benjamin Greening remained at the head of the Company; he was succeeded by his son, S. O. Greening, who, three years later, was joined by John Maw, formerly with the Clinton Wire Cloth Company of Clinton, Mass., and engaged in the capacity of Superintendent. The company was incorporated in 1889 under the style of **The B. Greening Wire Company Limited** and continued to carry out the policies laid down by its founder. When John Maw retired as Superintendent, the position was filled by H. B. Greening, and subsequently by F. J. Maw, son of John Maw, and on the death of the then President, S. O. Greening in 1911, H. B. Greening assumed the Presidency and F. J. Maw the General Managership and Vice-Presidency; in turn, their sons, S. O. Greening and J. L. Maw, were in 1945 elected Vice-Presidents in charge of Sales and Operations, respectively.* Thus it will be seen that this company has carried on for over four hundred years in the trade as originally started by Christopher Greening and in Canada it has steadily progressed for nearly ninety years, sixty-six of which have been under the joint management of two families, the Greenings and the Maws—a form of business which is not often seen these days. It is also interesting to note that this continuity of association is maintained in the Works, the present Superintendent, R. H. Rutherford, having succeeded to that position on the death of his father, Fred H. Rutherford.

★ ★ ★

TODAY, the present firm of B. Greening Wire Company Limited has expanded so greatly that the small shed in which Benjamin Greening started his company could now be put in one corner of one building. The plant and head office now occupy the equivalent of two and a half city blocks and a floor space of nearly four hundred thousand square feet, whilst the total number of employees amounts to approximately six hundred.

★ ★ ★

MACHINES used in the manufacture of Greening's products are of the latest design or of a design with the latest improvements on the original design. Many of these machines have been designed and built in the Company's shops and both machinery and buildings are kept in a very high state of repair and efficiency.

★ ★ ★

IT might be interesting to go through the plant, department by department.

★ ★ ★

Wire Mill

A VERY modern Wire Mill is the first stage in the production of wire—not only for use in the Company's own plant, but as an important item to sell. Canadian-made wire rods of approximately ¼-inch diameter are drawn cold down to whatever size may be required either for sale or for fabrication into the Company's own products. At present the following metals are being drawn: Steel, iron, brass, phosphor bronze, commercial bronze, copper, monel, nickel silver, "Nichrome" electrical resistance wire, pure nickel, stainless steel and zinc; the range offered for sale varies from ⅜ inch down to .002″ in diameter.

★ ★ ★

Rope Shop

STEEL Wire Ropes of all kinds and in all constructions, including the famous "Green Strand," are made from 1-16th of an inch to 3½ inches in diameter. The main uses, of course, for Wire Ropes are for metal mines, logging, well drilling, shipping, cranes, elevators, shovels, etc.; also various types of strands, including highway guide rail, standing and rigging, ropes, transmission support lines, galvanized wire clothes lines, and so on, are manufactured in this department. The wire for Wire Rope and strands is not manufactured by B. Greening Wire Company Limited, but is obtained from the best Canadian, English and American sources—as much as possible, of course, being obtained in Canada. The Company is licensed to manufacture the well-known "TRU-LAY" Preformed type of Wire Rope.

★ ★ ★

Weave Mill

ONE of the primary products of the Weave Mill is screen cloth, which is, of course, used for insect screening. This was formerly manufactured in a considerable variety of meshes, grades and colors, but it has been found advisable and, in these days of shortage of supplies, necessary to standardize on 16 x 12 mesh green-painted steel screen cloth, 16 x 16 mesh Bronze screen cloth, 16 x 16 mesh Copper screen cloth and 14 x 14 mesh Aluminum screen cloth. Also manufactured in the Weave Mill is a very wide range of wire cloth in all metals, viz., steel, brass, bronze, copper, monel metal, stainless steel, nickel, etc., in all meshes ranging from 1″ x 1″ mesh up to 165 mesh (mesh equals the number of openings per linear inch). The uses of this great variety of wire cloth range all the way from a foundry riddle to a sugar or oil refinery filter cloth, and includes practically every industrial need with the exception of Paper Mill Cloth (Fourdrinier Wires).

★ ★ ★

Wire Work Department

HEAVY wire screens are manufactured here for mines, quarries, etc. Screens made from wire up to ⅝″ in diameter can be produced here in a great variety of openings. The patented "Flatlock" construction is in great demand for all types of vibrating machines. Also manufactured in this department are wire guards for machinery, belts, windows, etc.

★ ★ ★

(Please turn to page 754)

* **Mr. F. J. Maw was at the same time elected Chairman of the Board of Directors.**

Stainless Steel Recording Wire

By R. E. Koontz, Electrical Engineer

National-Standard Company

Niles, Michigan

That stainless steel could be provided with magnetic qualities that suited it for recording work in the armed forces, in industry and in the home is a comparatively recent discovery — discovered, incidentally, accidentally. Due to its non-corrosive characteristics, it has become the standard metal for wire recording.

IT is quite commonly known that cold work on stainless steel makes it more magnetic. As applied to wire, successive reduction through dies causes a rise in residual magnetic induction and a drop in coercive force. Thus a permanent magnet characteristic is developed and a magnetic sound recording wire of "sorts" can be produced quite simply by a specific amount of cold reduction on most any heat of 18-8 type steel.

★ ★ ★

IN the history of development of recording wire it was early disclosed that the control of the cold work factor above was not enough to meet the requirements of a magnetic record medium which would be satisfactory. The requirements are stringent. The medium must be uniform so that signals can be reproduced accurately in their true relationships without variation. Magnetic factors must be controlled within a standard range in order to provide proper performance on all makes of magnetic wire recorders. The wire must be readily erased. Transfer must not be too high. Erased AC noise and modulation noise must not be too high. Wire must be smooth, clean, and for best results, specially lubricated. Distortion must be low. Frequency response must be adequate.

★ ★ ★

Explanation of Properties Important to Recording Magnetic Requirements

COERCIVITY — the maximum coercive force (Hc), when tested in a magnetizing field (Hm) of 1,000 oersteds in an approved manner, shall lie between 225 and 325 oersteds.

★ ★ ★

COERCIVITY EXPLAINED. Coercivity (Hc is the symbol for magnetic coercivity) is the magnitude of demagnetizing field in oersteds required to reduce ferric induction to zero after the maximum magnetizing field (Hm) has once been applied.

Hm EXPLAINED. Hm is the symbol for Magnetizing Field which is the maximum field in oersteds applied to the specimen in test.

OERSTED DEFINED. Oersted is a unit of magnetic field strength of such magnitude as to produce one magnetic flux line per square centimeter in air.

★ ★ ★

RETENTIVITY — the maximum residual induction (Br) when tested in a magnetizing field (Hm) of 1,000 oersteds in an approved manner, shall lie between 1500 and 2500 gauss.

RESIDUAL INDUCTION EXPLAINED. Residual induction (Br—the symbol for magnetic induction) is the induction in gauss which remains in the recording medium after the magnetizing field has been reduced to zero.

GAUSS DEFINED. Gauss is a unit of magnetic flux density equal to 1 flux line per square centimeter.

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THOSE are basic magnetic requirements which insure that the wire will be "standard" and adapt properly to operation on all recorders. Magnetic factors are influential on other properties, such as frequency response, sensitivity and erase; but keeping in the above range of magnetics does not guarantee other properties; they must also be controlled and tested.

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Dynamic Range — Signal and Noise

RANGE OR DYNAMIC RANGE EXPLAINED. Range is a measure of the difference between the loudest signal available from the wire, as compared to the background noise. This range should naturally be as great as possible. A saturated signal at frequency of maximum response (1000 to 1500 cycles), is indicative of the loudest signal. The erased noise is the background noise. The difference between these two is the dynamic range.

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ERASED NOISE EXPLAINED. Erase is the use of high frequency (supersonic above 15,000 cycles) energy in the erase gap to put the recording medium in a neutral condition. Erase is a demagnetization procedure. After erase a residual signal of low value is left in the wire due to imperfect wave shape of the erase and bias oscillator and to variations in field in recording head as wire passes through. Small variations of wire properties along the length also affect the quantity of residual noise signal.

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SIGNAL ERASURE EXPLAINED. In addition to erasure noise, there is the factor

of remnant signal. Wire showing magnetic properties of saturation at high field values are more difficult to erase. The erase field strength available in wire recording heads is limited and therefore strong signals will not be erased completely if wire has too high a saturation field value. Low level un-erased remnant signals of old recordings are intolerable when listening to a new recording.

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THE MODULATION NOISE level shall be at least 40 Db below the saturated signal output at the frequency of maximum response. The modulation noise shall be measured by sufficient direct current in the recording head to attain maximum noise level.

MODULATION NOISE EXPLAINED. Modulation noise is a noise which rides along with recorded signal, and can be measured by passing direct current through a recording head to obtain maximum noise level. The lower this modulation noise is the better, and a range at least 40 Db between this noise and the saturated signal is desirable.

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Transfer—Cross Magnetization

CONSTANT check of transfer characteristics of the wire is maintained at the wire mill, to keep at absolute minimum the cross magnetization that can occur in mass production of the wire. Wire saturated with signal is laid adjacent to or wound around virgin wire, after which the virgin wire thus exposed is passed through a playback head to determine the amount of signal transferred. Only repetitive check can assure production of proper wire.

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Frequency Response—Other Tests —Instruments

FREQUENCY response refers to the accuracy or fidelity with which signals of all frequencies are recorded and reproduced. A flat response indicates recording and reproducing the original signal accurately for all frequencies.

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TESTING the magnetic recording wire, as such, with instruments is one thing. Testing the wire by "ear" when in use in a wire recorder or radio set equipped with a wire recording mechanism, is quite another thing. It is readily admitted that the final test by the customer-user is what he hears played on the recorded program on the wire — but there are certain tests which the wire mill engineers **must make,** and which engineers utilizing the wire recording art **should** make with instruments, to assist them in locating deficiencies audible when the listening tests are applied.

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DURING the processing of the wire, repetitive tests are frequently made with instruments to insure uniformity, adherence to specifications and close tolerance controls; when the wire is completely processed, additional instrument tests are made of the wire as wound on the bulk supply spool.

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1. FREQUENCY RESPONSE TESTS can be made with a wire moving mechanism together with recording, playing, and erasing heads and a standard frequency response recorder. The proper level of audio signal, together with normal bias, is fed to the recording head, and the playback is fed through an amplifier to the recording pen movement producing the chart. The audio oscillator is motor driven over the frequency range producing a constant current frequency chart of the wire on the heads used during the test.

2. A FREQUENCY RESPONSE CHART can be made readily without a special recorder, by manual manipulation of an audio oscillator selecting three or four frequencies which will develop the desired curve.

3. WIRE NOISE MEASUREMENT can be made accurately **only where** the measuring device is free of hum and noise. Using a virgin wire and no erase

Fig. 1.— * * * * * * * * * *

Fig. 2.— * * * * * * * * * *

power, the playback head is connected to an amplifier and vacuum tube voltmeter. With wire running and erase not energized, the playback head should not indicate a level of over 10 microvolts. Then, when the erase is energized, the playback head will indicate the erased noise level of the wire.

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FOLLOWING is a list of some of the equipment used at the Niles, Michigan, plant of the National-Standard company for testing magnetic recording wire during and after production:

INSTRUMENT OR DEVICE	DETERMINATION
1. Specially designed Magnetic Tester.	Checks Hc and Br.
2. Precision wire moving mechanism.	Checks noise, uniformity and response.
3. Audio oscillators.	Checks response of the wire.
4. Decade Amplifiers.	Checks output of the wire.
5. Ballentine (or equal) Vacuum Tube Voltmeters.	Checks output of the wire.
6. Harmonic wave analyzer.	Checks distortion of recorded signals.
7. Frequency response recorder.	Checks frequency output — characteristics.
8. Esterline Angus chart recorder.	Charts uniformity of the wire.
9. Bias oscillators.	Supplies power for erase and bias for testing the wire.
10. Continuous loop testers.	Compares various heads and are used in testing the wire.
11. Cathode Ray Oscillograph.	Checks recorded signal wave shape.
12. High Fidelity amplifiers, microphones and loudspeakers.	Used in making comparative listening tests.
13. All types of recording heads—those in production and under development.	Used to check performance of the wire in various heads.
14. All types of Wire Recorders—those in production and under development.	Used in overall comparison of final use of wire in wire recorders.

Some of these instruments can be seen in accompanying photographs. (See page 731)

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THESE factors of importance in a record medium were new to National-Standard Co., as to any wire manufacturer. Many variables not important to results on wire for ordinary uses were found to be vital as related to results with recording wire.

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THE present production control methods to produce standard high quality recording wire were attained only after diligent pursuit and many, many tests.

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SOME INTERESTING COMPARISONS

STAINLESS STEEL RECORDING WIRE	REGULAR STAINLESS STEEL WIRE
1. It is a special wire produced for magnetic sound recording.	1. It is not a special wire and is produced for usual commercial wire application.
2. It is drawn from especially selected heats of stainless steel to give desired performance.	2. It is drawn from all commercially acceptable heats of stainless steel. (Mine Run).
3. Magnetic and electrical characteristics are positively controlled.	3. Magnetic and electrical characteristics are not controlled.
4. Constant, repetitive tests during processing are required to insure correct recording, playing, erasing performance.	4. Testing is limited to checks on tensile strength and other physical characteristics.
5. The finished wire must undergo thorough cleaning to insure removal of all drawing lubricants, coatings, foreign matter, etc.	5. The finished wire is not cleaned.
6. Special lubrication is applied for best magnetic recording results insuring smooth passage through recording heads.	6. Lubrication sometimes added for ease of fabrication.

Outline of Production Practice

1. The selected stainless quality alloy rod from acceptable heats, previously approved by the pilot laboratory, comes from the steel mill in a diameter many times the size to which it is finished—to permit ample cold working and heat treatments in processing described in the following steps.
2. Representative samples of various lots of the rod mentioned above are completely processed in a laboratory pilot plant. This is a further check on the suitability of the heat. It is also used to set the pattern for the detailed practices to be used in processing the various lots of acceptable rod — an essential step in the preliminary operations.
3. The rod is coated and breakdown drawing of the wire is made. The coating is removed. A magnetics and physical test is made at this point. The wire is either approved or rejected.
4. The approved wire is then annealed and coated. An intermediate drawing is made. The coating is removed. A magnetics and physical test is made at this point. The wire is either approved or rejected.
5. The approved wire (following second test) is again annealed and coated. A further intermediate drawing is made. The coating is removed. A magnetics and physical test is again made at this point. The wire is either approved or rejected.
6. The approved wire (following third test in process) is again annealed and then drawn to the finished diameter size of .0036″ diameter. A magnetics and physical test is again made at this point. The wire is approved or rejected.
7. The approved .0036″ wire is then thoroughly cleaned—to insure removal of all foreign matter from the surface of the wire, and is carefully lubricated with special lubricant.
8. A final process test is made of the cleaned, finished wire to accurately evaluate the magnetic

(*Please turn to page* 763)

Compounding Vinyl by the Special Speedmullor Process

By Chester J. Scanlan, M.E.

Beardsley & Piper Division
Pettibone Mulliken Corporation
Chicago, Illinois

Compounding vinyl resins in the mill is a growing trend. This article describes a compounding mechanism that is now being used in a number of electric wire plants.

THE origin of the word "mullor" is lost in Biblical times. It is a machine to mix materials. The first mullor was a large stone wheel rolled in a circle by a team of oxen. The material that was pressed beneath the wheel being loosened manually. Mullors of this type are in use in India to this day.

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FOR more than four thousand years the principle of the rolling vertical wheel has been used to mix materials, particularly a liquid into a powdered material. Wheels have been changed to steel, the bearings from common types to anti-friction and the power from oxen to steam engines and finally to electric motors, but the basic principle has remained the same. The Biblical mullor had difficulty in keeping the material beneath the wheels, because centrifugal force was constantly moving the material to the outer rim of the bowl.

★ ★ ★

ABOUT twenty years ago our company contributed the first new idea in many centuries to the design of mullors by placing the wheels in a horizontal position on a pivot arm, moved out toward the side wall of the bowl by centrifugal force. In addition, by the proper placement of plows, the material to be mulled is held in suspension by centrifugal force in the shape of a doughnut, the wheels rolling in the center. Thus, centrifugal force is used to advantage. This method of mulling has proven to be five times or more faster than its predecessors, the old style mullors, tumbling barrels or cone type mixers. The perfection of dispersion surpasses all other methods of compounding liquid and powders.

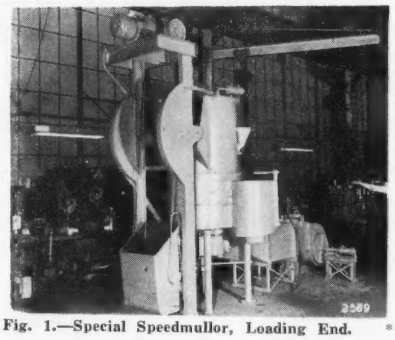

Fig. 1.—Special Speedmullor, Loading End.

★ ★ ★

AS stated, this new machine, called the "SPECIAL SPEEDMULLOR," embodies the only new idea in design of mullors given to the world in four thousand years. It is the last word in compounding machines, because it so perfectly distributes the ingredients into a homogeneous mass.

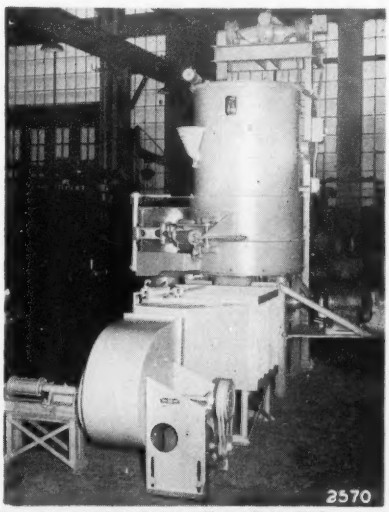

Fig. 2.—Special Speedmullor, Exit End.

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RECENTLY the Special Speedmullor has been applied to the compounding of Vinyls. By this method, resin, coloring materials and plasticizer are dispersed without fusion or mechanical working. The resulting powder may be extruded or calendered without further processing. The cycle time required for this complete operation is from six to eight minutes. No mechanical disintegration or decomposition occurs during the process.

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THE operation of the SPECIAL SPEEDMULLOR is as follows: The proper amount of resin in powder form is charged into the mullor by means of a Skiphoist, along with any filler or coloring material. The proper per cent of liquid plasticizer is then added to the batch thru a funnel on the side of the hood. After the mulling action has progressed approximately fifteen seconds, an air operated valve is opened and hot air is blown thru the mass to elevate its temperature and produce a thoroughly dry powder. After heating for three to four minutes, the position of the damper is changed automatically, so that cool air is blown thru the mass to lower its temperature. The powder then is discharged completely dry and ready for extrusion. Because of its low temperature, the material will not

(*Please turn to page* 764)

Yankee ingenuity, in devising new ways to make carbide wire dies and other carbide products better and at the same time cheaper, has developed dies worthy of your personal investigation—and use.

Cost-cutting becomes a practical possibility through the use of HARTLEY CARBIDE DIES because you can save on first cost, but better, on the cost per pound of wire or tube drawn also.

It is not necessary to guess as to the quality of your dies when you see on them the Hartley trade-mark, because every Hartley die is GUARANTEED.

The Hartley Company is one hundred years old this year—1950. For the past twenty-two years we have been pioneers and specialists in the development of cemented tungsten carbide and its applications. If you would do yourself a favor, write today for the catalog and price list of the

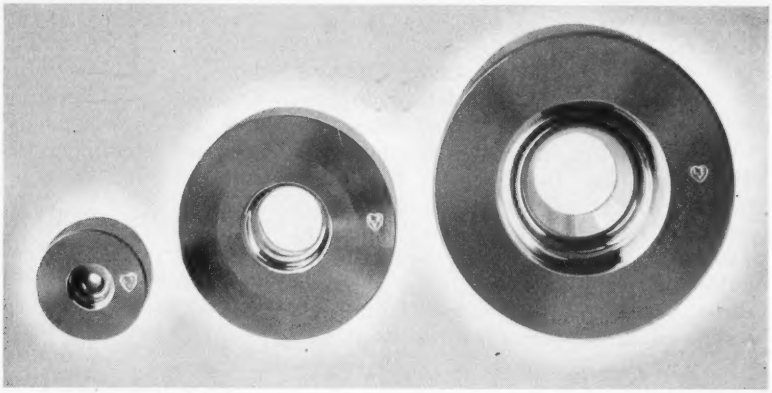
HARTLEY TOOL & DIE COMPANY
THOMASTON, CONN.

HARTLEY DIES

AND OTHER CARBIDE PRODUCTS WILL SATISFY YOUR EVERY NEED

Here are some of the things we make for you besides round-hole dies:

Cold Heading	Eyelets	Necking	Welding Rod
Special Shapes	Ferrules	Deep Drawing	Coating
Tube Drawing	Swaging	Lamination	Wire Guides
Rope Stranding	Blanking	Cupping	Wear Parts



WATCH FOR THE HEART ON *Every* DIE

your assurance of highest quality and service

L E Y

TRADE MARK REGISTERED

The illustration above shows a typical application of HARTLEY workmanship on wire, rod and tube drawing dies. Such dies, as well as any HARTLEY product, are manufactured with the utmost care and precision. They must pass rigid inspections before being released for use in your mill. Your complete satisfaction is our life-blood. This is why HARTLEY carbide dies, tools and parts are finding such widespread customer approval.

Special Requirements will be engineered to meet your needs. A complete catalog and price list will be sent upon request.

HARTLEY
TOOL & DIE COMPANY
THOMASTON, CONNECTICUT
Telephone 625 - 626

Firth Sterling Opens New Facilities For Midwest

Mr. Edgar Henry, in charge of Firthaloy's Chicago shop. Formerly with Keystone Steel & Wire Company, Detroit Wire Die Co., Vascoloy Ramet.

A COMPLETE and modern die finishing shop has been opened in Chicago by the **Firth Sterling Steel and Carbide Corporation.** "To make available rapid and emergency die finishing service to the expanded wire and fastener industry of the north mid-west," explains Mr. **T. W. Gabriel,** General Sales Manager of Firth Sterling.

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BEHIND this expansion of service facilities is the fact that since 1940, the wire mills in that area have doubled their capacities with the use of carbide drawing dies. Meanwhile, the conversion by the fastener industry from steel to carbide for cold heading, which in 1945 was about one set of carbide tooling to every 50 sets of steel tooling, now stands something like 30 carbide to 20 steel. "This transition would not appear phenomenal until you realize that in respect to the total number of pieces produced, one set of carbide cold heading tools replaces the production capacity of nearly 20 sets of steel tooling."

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THE new Chicago shop is equipped to do rough drilling, polishing and finishing of wire, bar and tube drawing dies. Stocks of rough cored dies will be shipped from the main plant at McKeesport, Pa. (see Figure 1). Rush or emergency orders will be finished at the Chicago shop, and the normal flow will be finished at McKeesport.

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Mr. Elmer Weber, Firthaloy Specialist, will assist Mr. E. T. Miller on customers' die engineering requirements.

IN addition to drawing die service, Firth Sterling will also finish cold heading tooling and repair or rework customers' cold heading tooling at the Chicago shop.

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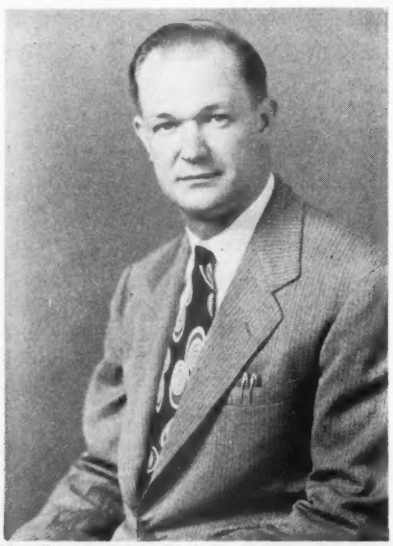
MR. **EDGAR HENRY,** formerly with Keystone Steel & Wire Co., will be in charge of the Chicago shop. Ed Henry received his appointment under the new streamlining of Firth Sterling Engineering Service. Mr. **Edgar Mil-**

Mr. Edgar T. Miller, Supervisor, Die Sales. Mr. Miller was a panel member of the Symposium at the 1949 Wire Association Convention.



Mr. Wm. J. Leigh, Firthaloy Cold Heading Specialist with Firth Sterling 15 years. Mr. Leigh supervises design and application of carbides for cold heading tooling.

Mr. Andrew Marhefka, expert die finisher with Firth Sterling 15 years at McKeesport—now at Firthaloy Chicago shop.

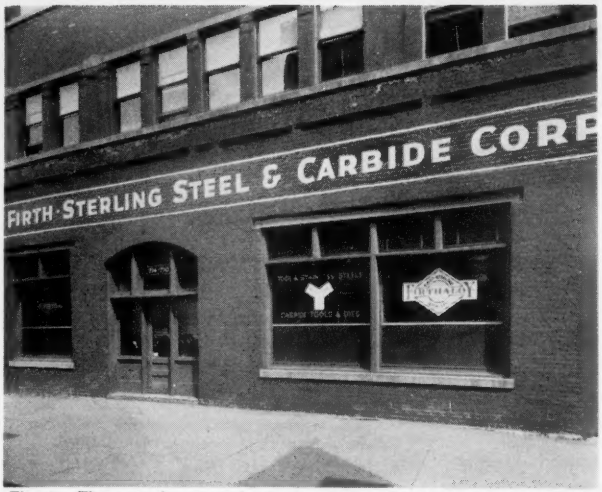


Fig. 1.—The new shop occupies two rooms on the first floor of the Firth Sterling Chicago building—set apart from the warehouse sections.

Fig. 2.—Mr. E. A. Carpenter is Firth Sterling's new Chicago District Manager.

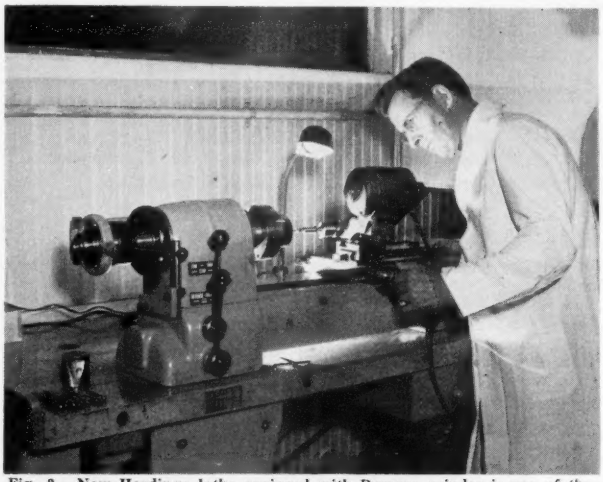


Fig. 3.—New Hardinge lathe equipped with Dumore grinder is one of the pieces of equipment in the new die finishing shop.

Fig. 4.—The new Firthaloy Chicago shop is especially planned for limited operations—die finishing and reworking customers' dies and cold heading tooling.

ler is Supervisor of Die Sales and is the top man in the Firthaloy Engineering service for wire, bar and tube drawing dies. He is assisted by Mr. **Elmer Weber** at McKeesport. Under the new plan, Mr. **Andrew Marhefka,** expert die finisher from the McKeesport plant, will move to the Chicago shop.

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Firth Sterling will maintain duplicate sets of die blue prints of their midwest customers in Chicago and McKeesport, so that the full advantages of speed communications can be made of the direct wire service between the two plants.

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A GOOD example of what this new service facility means to the midwest wire and fastener industry is a recent incident. One customer with limited facilities needed three special shape dies refinished. He sent the dies by messenger to the Firthaloy Chicago shop—waited several hours while the work was being done. The direct special service meant a savings of 72 hours of shut-down time.

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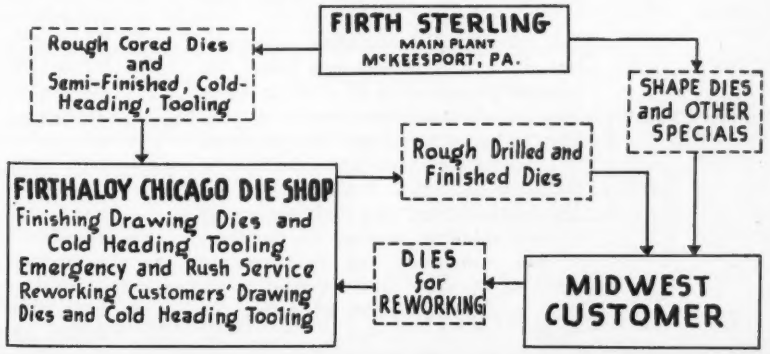
FIRTH STERLING
MAIN PLANT
McKEESPORT, PA.
Rough Cored Dies and Semi-Finished, Cold-Heading, Tooling
SHAPE DIES and OTHER SPECIALS
Rough Drilled and Finished Dies
FIRTHALOY CHICAGO DIE SHOP
Finishing Drawing Dies and Cold Heading Tooling
Emergency and Rush Service
Reworking Customers' Drawing Dies and Cold Heading Tooling
DIES for REWORKING
MIDWEST CUSTOMER

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THE Wire Association is a non-profit organization of wire mill executives, superintendents and foremen. It also includes plant engineers, traffic men, and all others engaged in the production of cold drawn bars, rods, wire, strip, insulated wire and cable, and the manufacture and fabrication of finished wire products, including cold headed, extruded and other cold worked metal products.

THERE are separate divisions for all the separate major interests in the wire industry, steel, iron, brass, copper, alloy, and precious metals, together with divisions relating to drawing, cold working, cold heading, extruding, fabricating, forming, spring making, wire cloth, wire rope, bare and covered electric wire and cable and all other forms of wire and wire products.

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PURPOSES

ITS specific purpose is to improve production methods and afford a clearing house for ideas on management problems, technical problems, and research work in all phases of practical wire drawing and wire working, and to develop and maintain friendly relations among the members.

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ACTIVITIES

The Association functions along the following lines:

1. The use of the Association headquarters as a central clearing house for information and data of all kinds which may be of interest to members.
2. The exchange of ideas on processes of production including machinery, technical processes, etc.
3. The establishment and maintenance of friendly relations among the members of the association and the development of sectional and national meetings to discuss matters of mutual interest.
4. Studies of production methods and analysis of production costs.
5. Developments in the use of new materials and new applications of existing materials and by-products.
6. Research and collection of information on personnel management, including such factors as labor turnover, seasonal changes in the demand for employees, wage scales, etc.
7. Standardization and simplification as a means for the effective elimination of waste.
8. Such other subjects as may be determined upon.

PROGRAM

Annual Convention of The Wire Association

Lord Baltimore Hotel, Baltimore, Md., October 23-26, 1950

Wire Association Headquarters at the Lord Baltimore Hotel
Will be Open from Monday, October 23, Every Evening During the Convention
Come and Get Acquainted!

THERE WILL BE A REGISTRATION FEE OF $5.00 FOR THOSE ATTENDING THE TECHNICAL SESSIONS AND INFORMAL MEETINGS.

ADMISSION WILL BE BY BADGE ONLY — PLEASE WEAR IT

Discussions Will Be Held on the Papers Presented and These Discussions Will Be Published in the January, 1951, Issue of Wire and Wire Products

WIRE ASSOCIATION PROGRAM COMMITTEE FOR THE 1950 CONVENTION

Lord Baltimore Hotel, Baltimore, Md., Oct. 23-26, 1950

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Bethlehem Steel Co., Sparrows Point, Md.
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SMOKER-DINNER

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Sales Promotion
Firth-Sterling Steel & Carbide Corp.
McKeesport, Pa.

All wire mill men and suppliers are invited to attend this meeting, see how the Association functions and participate in the activities.

GENERAL ACTIVITIES

Richard E. Brown, Executive Secretary
THE WIRE ASSOCIATION
300 Main Street
Stamford, Conn.

Papers selected are preprinted in Wire and Wire Products October 1950 issue in advance of the meeting. Title to papers accepted will be given the Wire Association and duly copyrighted at time of publication. All papers are eligible for consideration for the Annual Medal Award.

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ANNUAL LUNCHEON

Mrs. R. S. Spengel, Sec.-Treas.
Wire and Wire Products
Stamford, Conn.

All wire mill men and suppliers are invited to attend this meeting, see how the Association functions and participate in the activities.

Hotel reservations should be made by members of the Wire Association direct to the Secretary.
MAKE YOUR PLANS NOW TO ATTEND AND SEND YOUR RESERVATION PROMPTLY

MONDAY, OCTOBER 23

9:00 A. M.	10:30 A. M.	12:30 P. M.
REGISTRATION	DIRECTORS' MEETING	PROGRAM COMMITTEE LUNCHEON

— The Technical Sessions —

Lord Baltimore Hotel, Baltimore, Md., October 23-26, 1950

MONDAY, OCTOBER 23

Afternoon Session — 2 P. M.

Address of Welcome by Fred M. Crapo, President, Wire Association

	Norman T. Nelson Production Engineer Chairman of Meeting	Bethlehem Steel Co. Sparrows Point, Md.
PAPER: "Material Handling at the Rod and Wire Mills of the Western Electric Company"	J. E. Wiltrakis Assistant Superintendent Factory Planning and A. A. Bureau Department Chief Material Handling	Western Electric Co. Kearny, N. J. Western Electric Co. Hawthorne Works Chicago, Ill.
PAPER: "A New Method of Storing Rod"	A. F. Anjeskey Sales Manager	Cleveland Tramrail Div. Cleveland Crane & Engineering Co. Wickliffe, Ohio
FILM ON STEEL MAKING	"Fifteen Minutes With Bethlehem." This will serve as a preview for the inspection trip on Thursday.	

TUESDAY, OCTOBER 24

Morning Session — 9:30 A. M.

FERROUS SECTION

	Robert Peterson Production Manager Chairman of Meeting	Thompson Wire Co. Worcester, Mass.
PAPER: "The Use of High Carbon Wire In Pre-Stressing Concrete"	H. Fornerod	The Preload Corp. New York, N. Y.
PAPER: "Wire Testing and Evaluation of the Usual Tests Applied to Steel Wire"	Lewis R. Steuer Superintendent of Tests Williamsport Plant	Bethlehem Steel Corp. Williamsport, Pa.

NON-FERROUS SECTION

	Sidney Rolle Assistant Manager Chairman of Meeting	The Scomet Co. New York, N. Y.
PAPER: "Alumiuum Rod and Tube Production. Drawing and Extruding"	Charles E. Hughes Sales Engineer	Firth-Sterling Steel & Carbide Corp. McKeesport, Pa.
PAPER: "The Production and Application of Copper Base Alloy Wire"	W. D. France and Wayne Johnson and W. L. Wells	Scovill Manufacturing Co. Waterbury, Conn.

TUESDAY, OCTOBER 24

Afternoon Session — 2 P. M.

FERROUS SECTION

	R. S. Worth Manufacturing Manager Wire Mills Div. Chairman of Meeting	John A. Roebling's Sons Co. Roebling, N. J.

CLEANING AND COATING SYMPOSIUM

PAPER: "Salt Cleaning of Wire"	H. Clark Smith, Jr.	Wilbur B. Driver Co. Newark, N. J.
PAPER: "Straight Line Cleaning and Coating using Lime or Borax"	R. H. Hertzog	John A. Roebling's Sons Co. Roebling, N. J.
PAPER: "Mechanical Cleaning of Hot Rolled Wire Rod and Bar Stock"	Gilbert D. Dill	American Wheelabrator & Equipment Corp. Mishawaka, Ind.
PAPER: "Phosphate Coatings"	James Leland	Parker Rust Proof Co. Detroit, Mich.
PAPER: "New Coatings for Bolt and Nut Stock Requiring No Lubricant"	W. Hill, Jr.	Russell, Burdsall & Ward Bolt & Nut Co. Portchester, N. Y.

Afternoon Session — 2 P. M. NON-FERROUS SECTION

Plant Inspection Trip—Point Breeze Plant—Western Electric Co. — For Non-Ferrous Members —

— The Technical Sessions —

Lord Baltimore Hotel, Baltimore, Md., October 23-26, 1950

WEDNESDAY, OCTOBER 25

Morning Session — 10:00 A. M.

FERROUS SECTION

Tom Girdler, Jr.
Superintendent
Beaver Falls Plant
Chairman of Meeting

Union Drawn Steel Div.
Republic Steel Corp.
Beaver Falls, Pa.

PAPER:

"Drawing of Stainless Steel Wire"

Kenneth Findlay
Metallurgist

Allegheny Ludlum Steel Corp.
Dunkirk, N. Y.

PAPER:

"Wire for Welding Electrodes"

James Claussen
and
H. E. Sincock

Reid-Avery Co.
Dundalk, Md.

NON-FERROUS SECTION

Sidney Rolle
Assistant Manager
Chairman of Meeting

The Scomet Co.
New York, N. Y.

PAPER:

"Neoprene Jacketed Telephone Wires"

C. C. Lawson
Wire Development Engineer

Bell Telephone Laboratories
Murray Hill, New Jersey

PAPER:

"The Gas Compression Cable"

Kenneth S. Wyatt
Cable Engineer

Phelps Dodge Copper Products Co.
New York, N. Y.

WEDNESDAY, OCTOBER 25

1:00 P. M.

WIRE ASSOCIATION LUNCHEON

THE MORDICA MEMORIAL LECTURE

J. L. Schueler
General Superintendent
Continental Steel Corp.
Kokomo, Ind.

Title: "Design and Manufacture of Woven Wire Fence"

— Presentation of the Wire Association Medal Award for 1949 —
To John H. Corson, Metallurgist, John A. Roebling's Sons Co., Roebling, N. J.

Title: "Welding in the Wire Industry"

LADIES ARE CORDIALLY INVITED TO ATTEND

LADIES ARE CORDIALLY INVITED TO ATTEND

WEDNESDAY, OCTOBER 25

Annual Meeting of the Wire Association
Fred M. Crapo, President
Chairman of Meeting

Immediately Following The Luncheon

WEDNESDAY, OCTOBER 25

6:30 P. M.

ANNUAL DINNER-SMOKER

N. W. deBerardinis, Manager
Sales Promotion
Firth-Sterling Steel & Carbide Corp.
McKeesport, Pa.

THURSDAY, OCTOBER 26

10:30 A. M.

INSPECTION OF ROD AND WIRE MILL

Bethlehem Steel Co.
Sparrows Point, Md.

Busses Leave Hotel at 10:30 A. M.

Steamer Latrobe will leave Baltimore at 11 o'clock for inspection of historic Baltimore Harbor before proceeding down the bay to Sparrows Point.

Box lunch will be served enroute.

Boat will dock at Sparrows Point at 1:30 where busses will be waiting to transport visitors through the steel plant and to the Rod and Wire Mill.

LADIES ARE INVITED.

Upon completion of inspection, busses will be waiting to transport members and guests back to Baltimore. Ladies Are Invited.

RESEARCH PAPERS ARE PREPRINTED IN THE OCTOBER ISSUE OF WIRE AND WIRE PRODUCTS
The Discussions and the Mordica Memorial Lecture will be printed in the January 1951, issue of Wire and Wire Products

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Papers not received in time for preprinting will be published in the November and December issues of Wire and Wire Products.

GOVERNMENT WIRE PRODUCTION INFORMATION

National Bureau of Standards Publication

THE following are some of the publications of the National Bureau of Standards issued during June 1950. Copies may be obtained at listed prices from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

★ ★ ★

RP2073 Heats of polymerization. A summary of published values and their relation to structure, Donald E. Roberts, 12 pp., 10 cents. This paper contains a table showing values of heats of polymerization assembled from a survey of the literature. There are 42 substituted vinyl compounds arranged as follows: Vinyl alkyls, vinyl aryls, other vinyls, vinyl acids and esters, dienes and copolymers.

★ ★ ★

RP2084 Crystallization and second-order transitions in silicone rubbers, C. E. Weir, W. H. Leser, and L. A. Wood, 6 pp., 10 cents. In the course of an investigation to determine which rubbers might be suitable for use at low temperatures, interferometric measurements of the length-temperature relationships of silicone rubbers have been made.

★ ★ ★

R198-50 Wire rope (supersedes R198-43), 21 pp., 10 cents. Standard sizes of wire rope including coated and uncoated, steel, and fiber cores are given. Weight per foot and breaking strengths are also given.

★ ★ ★

Government Procurement Program

THE small businessman may now find it easier to participate in Uncle Sam's expanding $100 million per day buying program.

★ ★ ★

IN line with the Defense Department's policy to give all business an opportunity to "window shop" for a larger share of government contracts, a comprehensive procurement reporting service is now available. Published daily, the Government Procurement Reporter of Long Island City 1, N. Y. reports all government purchasing data, gathered directly from original bid papers by field reporters covering 2500 buying agencies throughout the country and published the same day received. A trained staff of researchers tabulate results of bids and opportunities for sub-contract work.

★ ★ ★

A BROCHURE describing the "what, where and how" of Federal Government procurement activities is now available to business firms upon request.

★ ★ ★

MODEL "J"

TYPE AUTOMATIC

MICRO-WELD BUTT WELDER

MICROMETER PRECISION — MICRO-WELD — TRADE MARK REGISTERED

This type welder is available in five Models (J-45-C) (J-5-C) (J-6-C) (J-7-C) (J-8-C) for welding COPPER, ALUMINUM, and other non-ferrous wire and rods, ranging in size from .080" to ½" diameter.

The welding cycle on these units is automatically completed by one single downward stroke of the foot pedal, which clamp the stock being welded, contact the welding switch, and apply the upset pressure on the weld.

All welders are equipped with annealing dies, filing vise, hand shears, and mounted on a 4-wheel truck.

MICRO PRODUCTS COMPANY

20 NORTH WACKER DRIVE 2, CHICAGO 6, ILL.

Telephone, State 2-7468

Atlantic Steel Forms Product Engineering Department

IN response to the marked growth of metal-working industries throughout the South, and to increased demand for diversification of its own products, the Atlantic Steel Company, Atlanta, announces the formation of a Product Engineering Department. **R. S. Lynch,** President of the company, stated that the new department had begun operations effective August 1, 1950.

★ ★ ★

ATLANTIC STEEL COMPANY is recognized as one of the two or three most diversified steel mills in the United States. Not only does industry in the southeastern region afford them at this stage a great opportunity for keeping its own products adapted to needs; but it is also felt to be an obligation to Southern industry and agriculture to create research and development services which are predicated on broadening the productive capacity of industry in the region, to help them to improve their application of steel in the processing of their products, and to offer other direct aids which will result in improved quality and design of finished steel products made by Southern manufacturers.

★ ★ ★

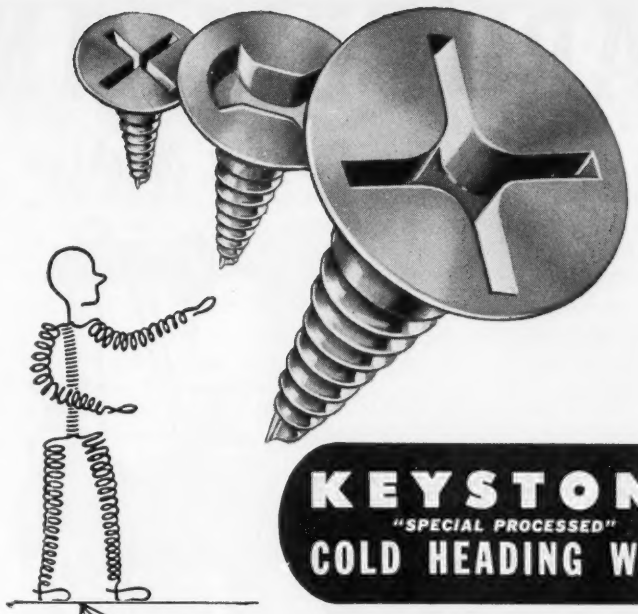
MR. LYNCH identified **F. A. Teeple, Jr.** as Manager of the Product Engineering Department. Mr. Teeple, with Atlantic Steel since 1934, has had a broad background and extensive experience in the metals fabrication field both as design engineer and in important operating and executive capacities. Prior to his new position he served as Superintendent of Atlantic Steel's Manufactured Products Division. He is a graduate of Georgia Tech in Mechanical Engineering.

★ ★ ★

The A-B-C's of Aluminum

THIS is a 96 page book issued by **The Reynolds Metals Co.,** 2500 So. Third Street, Louisville 1, Ky.

★ ★ ★



KEYSTONE
"SPECIAL PROCESSED"
COLD HEADING WIRE

EXCELLENT FLOW PROPERTIES
PROLONGS DIE LIFE
FEWER REJECTIONS
REDUCES INSPECTIONS

To attain true economy in the production of Phillips head and clutch head screws, an ever increasing number of manufacturers are specifying Keystone's new "special processed" cold heading wire.

This new wire delivers the desired upsetting and die forming qualities with a high degree of uniformity due to its excellent flow properties. Production reports show that die and plug life are often more than doubled . . . finished product rejections are minimized . . . the cost of expensive final inspections is reduced. The superior plating qualities of "special processed" wire further assure a better finished product.

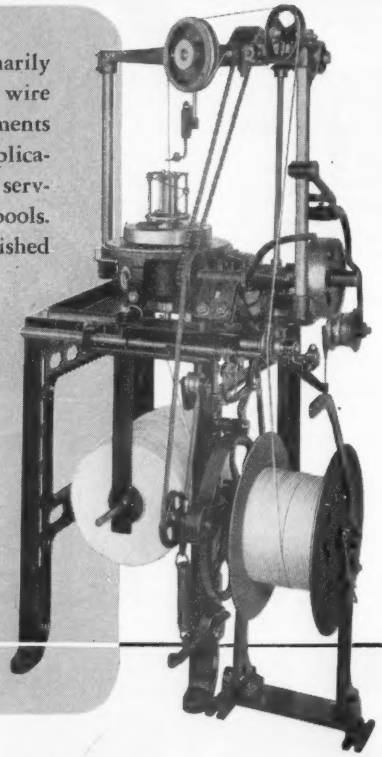
Whatever your industrial wire problems might be, Keystone metallurgical research and testing facilities are available to supply the answers.

KEYSTONE
STEEL & WIRE CO.
PEORIA . . . ILLINOIS

Special Analysis Wire, Setting New Standards of Performance

WARDWELLIAN®

Resistance Wire Serving Machine



This machine was designed primarily for applying fine sizes of resistance wire to asbestos core to form the elements used in heating pads, but it has application for other purposes where the serving material is supplied on small spools.

To assure accuracy in the finished product the capstan is positively driven through gearing by which backlash is reduced to the minimum. A releasing mechanism is provided to permit the material to be placed in accurate serving position when the supply is replenished.

The machine is equipped with adjustable traverse supply and wind-up stands, wind-up driving mechanism, and electric stop motion.

There are nearly thirty different applications for Wardwell equipment, including Braiding, Shielding with wire, Tape Serving, Yarn Serving, Asbestos Serving, Paper Serving, Armor Serving and Resistance Wire Serving.

Outstanding Features Include

- Production dependent upon the lay or pitch required.
- Change-gears for varying the lay are furnished.
- Serving head speed up to 1800 R.P.M.
- Driving pulley 7" diameter, 1¾" belt. Speed 568 R.P.M.
- Ratio pulley speed to serving head speed 3.166 to 1.
- Capstan 6" diameter, ¾" face, equipped with release
- Maximum diameter of core material .125.
- Supply spools 2½" diameter; 3⅜" long, ½" hole.
- Power requirement ½ H.P. at 1140 R.P.M.
- Stand to accommodate reels up to 24" diameter, 10½" outside width.
- Machine is equipped with electric stop motion.
- Holder takes supply package 10" diameter x 14" long.
- Special wind-up driving parts are required for reels with drums under 8" dia.
- Reels are not included with the machine.
- Weight approximately 421 lbs.
- Weight crated for domestic shipment approximately 518 lbs.

Complete detailed information on "WARDWELLIAN" Resistance Wire Serving Machine on Request

WARDWELL
BRAIDING MACHINE CO.
Central Falls
Rhode Island, U.S.A.
Representatives for Europe, British Colonies and Dependencies
JAMES MACKIE & SONS, LTD., BELFAST, IRELAND

THE text of the A-B-C's is divided into three principal sections. "A" is for ALLOYS, the big family of metals called "aluminum" . . . their production and fabrication; "B" is devoted to BENEFITS, the many natural advantages of aluminum and how they serve us; "C" covers CONSUMPTION, the many new uses for aluminum today and its potentials for tomorrow.

★ ★ ★

A SPECIAL feature is the series of 69 pictures and charts. These are arranged in sequence to present a pictorial story showing how aluminum is produced from raw ore, made into metallic aluminum, and then processed to form sheet, rod, bar, and other aluminum mill products. In addition, pictures of typical fabricating operations such as welding and forming are included.

★ ★ ★

"THE A-B-C's of ALUMINUM" was written and produced by **G. W. Birdsall.** It is sent without charge to anyone in the metalworking industry requesting it on company letterhead. Address all requests to Reynolds Metals Company, 2500 South Third Street, Louisville 1, Ky.

★ ★ ★

New Bulletin on Salt Bath Furnace

AJAX ELECTRIC CO., INC., Frankford and Delaware Aves., Philadelphia 23, Pa., has issued a new Bulletin describing the construction and operating characteristics of the new Ajax Salt Bath Furnace employing totally submerged electrodes. This design is especially well suited for heat treating operations in the temperature range 1700° to 2400° F., such as hardening high speed steel tools, high carbon-high chromium dies and stainless steel products, heating for forging, copper brazing, etc. This submerged electrode design has also been adapted to exceptionally deep baths (6 to 25 feet in depth) for heat treating unusually long work in the vertical position.

★ ★ ★

PLEASE write for Bulletin No. 123 describing the furnace.

★ ★ ★

New Riverside Data-Sheet Correlates ASTM, Federal, Army, and Navy Specifications

THE RIVERSIDE METAL COMPANY, Riverside, N. J., announces a new data sheet which correlates ASTM, Federal, Army, and Navy Specifications with 40 different Riverside alloys of phosphor bronze, nickel silver, beryllium copper, and cupro nickel.

★ ★ ★

THE sheet indicates to the designer, specification engineer, and purchasing agent which Riverside alloy to specify when working to ASTM, Federal, Army or Navy specs.

★ ★ ★

THE 40 Riverside alloys listed include: (1) phosphor bronze plate, sheet, strip, bridge plate, rod, bar, wire, and shapes; (2) copper-nickel-zinc sheet, strip, rod, bar, and wire; (3) beryllium copper plate, sheet, strip, rod, and wire; and (4) copper nickel sheet and strip.

★ ★ ★

IN addition to correlating the five specification systems, the new data sheet gives general characteristics and typical uses of the phosphor bronze, nickel silver, beryllium copper, and cupro nickel alloys.

★ ★ ★

COPIES of the two-color, 8½ x 11 sheets can be obtained, free, from The Riverside Metal Company, Riverside, N. J.

★ ★ ★

AD THOUGHT

May we suggest that reading the ads be made a regular habit. And when you write to an advertiser for information, it helps us and identifies your inquiry to say you saw the ad in WIRE AND WIRE PRODUCTS. Will you do this?

WOOD REELS
with SERVICE plus

If your mill is located anywhere within 200 miles of Hazardville, we will deliver them to your door in BRIDGE trucks—and overnight, in case of emergency.

For points beyond, carload shipments out of Springfield, Mass., via N.Y.C.R.R. can be in cities as far away as St. Louis on the third day. L.C.L. shipments to points like Buffalo or Cleveland via the Pacemaker will arrive the second morning and be delivered to your door *at no extra cost.*

BRIDGE REELS for CABLE, ROPE and WIRE are made in returnable and non-returnable types in sizes from 12″ to 96″ in diameter.

ALSO, REELS, HEADS FOR STEEL DRUMS BRIDGE SHIPPING and SHOP REELS are furnished assembled or knocked-down, made to your specifications. Built to withstand severest handling.

You are invited to avail yourself of our unique and efficient service and to visit our plant to see how BRIDGE REELS are made so well and why they are so sturdy and low in cost.

Send us your specifications and let us quote on costs.

BRIDGE MFG. CO.
Inc.
HAZARDVILLE • CONNECTICUT

Outstanding Personalities of the Wire Industry

Beardslee Named President, Wambold Executive Vice-President of Carboloy

KENNETH R. BEARDSLEE formerly Carboloy Vice-President and Marketing Manager has been named President of **Carboloy Company, Inc.,** to succeed the late Walter G. Robbins, it was announced recently by Roy W. Johnson, Vice-President and General Manager, Affiliated Manufacturing Companies Department, General Electric Company.

K. R. Beardslee, President Carboloy Company, Inc., Detroit, Mich.

★ ★ ★

AT the same time **Eugene F. Wambold** formerly Vice-President in charge of manufacturing was named to the newly created post of Executive Vice-President in charge of manufacturing, engineering, employee and community relations, and purchasing.

★ ★ ★

BEARDSLEE and Wambold have also been named to the Carboloy Board of Directors, the announcement reveals.

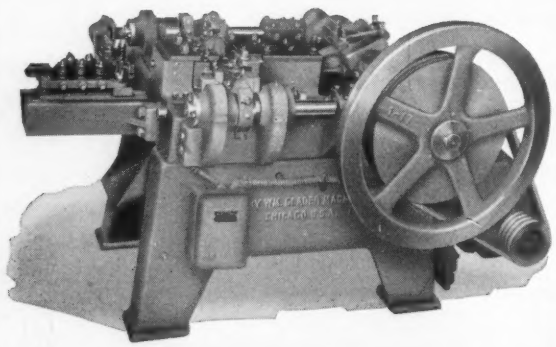
★ ★ ★

BEARDSLEE joined the Carboloy organization as sales engineer in the Newark, New Jersey, office in 1930 after several years of purchasing and sales experience with Mack Truck Company, and the Koebel-Wagner Diamond Company, then fabricators of Carboloy wire drawing dies.

★ ★ ★

E. F. Wambold, Exec. Vice-Pres. Carboloy Company, Inc., Detroit, Mich.

GLADER HIGH SPEED WIRE NAIL MACHINE



MACHINE ARRANGED FOR INDIVIDUAL MOTOR DRIVE

High tonnage output, and low maintenance costs, have resulted in Glader Machines being accepted as standard equipment in every large nail mill built in the United States in the past twenty years.

Glader Machines are operating in most of the wire producing mills throughout the world.

These machines are made in eleven different types and sizes. This enables us to cover the range of sizes of nails produced with the greatest efficiency.

For further information please address,

WM. GLADER MACHINE WORKS
210 No. Racine Ave.
Chicago 7, Illinois
Export Dept.: 122 E. 42nd Street, New York 17, N. Y.

IN 1933 he was appointed District Manager of the Pittsburgh office and in 1936 was advanced to General Sales Manager of the Company. He was named Vice-President in charge of sales in 1943 and Vice-President and Marketing Manager in 1948.

★ ★ ★

A MEMBER of the American Society of Tool Enginers and of the Wire Association, Beardslee is immediate past-president of the American Supply and Machinery Manufacturers' Association. He also is a charter member of the Detroit Sales Executives Club and of the National Federation of Sales Executives.

★ ★ ★

WAMBOLD joined the General Electric organization in 1926 at the Edison General Electric Appliance Company in Chicago. He rose to Superintendent of the Cicero Works in 1937. Manufacturing innovations developed by Wambold while operating a Carboloy tool manufacturing department at the Cicero plant during the early war years led to his appointment as Vice-President in charge of manufacturing of the Carboloy Company in 1943. Following the death of W. G. Robbins, he was appointed to the Administrative Committee of the Company.

★ ★ ★

IN addition to being responsible since 1943 for production of Carboloy cemented carbides for all kinds of tools, dies and wear resistant applications, Wambold has also been active in the developing of manufacturing facilities for the so-called "special metals", the commercial development of which was recently transferred to Carboloy from the General Electric Company. These include Alnico permanent magnet materials and "Hevimet", a new man-made metal of such extreme density as to be even more impervious than lead to the passage of radio-active rays, etc.

★ ★ ★

Baldwin Locomotive Appointment

MALCOLM L. HALL was appointed manager, testing equipment department, **Baldwin Locomotive Works,** Eddystone, Pa. He was sales manager of the department.

★ ★ ★

Copperweld Steel Appointment

DON V. SAWHILL was elected to the board of directors, **Copperweld Steel Co.,** Glassport, Pa. Mr. Sawhill is also president and director of Mercer Tube & Mfg. Co., Mercer Steel Products Co., Sawhill Mfg. Co. and Shenango Tube Co., all of Sharon, Pa., and Agaloy Tubing Co., Springfield, O.

★ ★ ★

E. E. Radcliffe With Reid-Avery Co., Inc.

E. E. RADCLIFFE is now associated with the **Reid Avery Co., Inc.,** Baltimore, as a specialist on submerged melt welding. He was formerly with the Unionmelt Div. of Union Carbide & Carbon Corp.

★ ★ ★

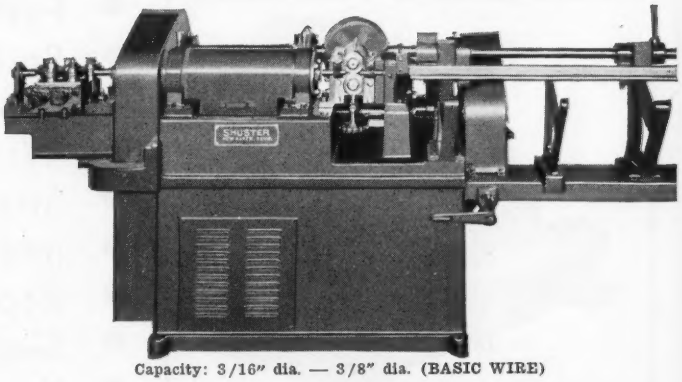
This New, Economical "SHUSTER"
Cuts Costs AND *Accurate Lengths!*

Model 2AB

Automatic

WIRE STRAIGHTENING AND CUTTING MACHINE

This new "SHUSTER"—with its five gear-driven straightening rolls—handles even badly twisted wire with ease. Square and rectangular as well as round wire may be straightened and cut to exact lengths. Other "Shuster" features that assure high speed, quality production are: almost continuous wire travel, rapid cut-off, V-belt motor drive, ball and roller bearings, and extreme rigidity throughout. .025" to 11/16" diameters. Write for details.



Capacity: 3/16" dia. — 3/8" dia. (BASIC WIRE)

Mfd. by METTLER MACHINE TOOL, INC., 132W Lawrence St., New Haven, Conn.

SHUSTER *Automatic* *Since 1866*
WIRE STRAIGHTENING AND CUTTING MACHINES

Representatives in all principal cities and in foreign countries.

H. C. R. Carlson Made Chairman of the American Society for Testing Materials, New York District Council

IT was announced in July that **Harold C. R. Carlson** has been elected Chairman of the **American Society of Testing Materials,** New York District Council, for the coming two-year period.

★ ★ ★

MR. Carlson heads his own firm of Design Consultants known as The Carlson Company, 277 Broadway, New York, and specializes in the field of machine design. He is well known in engineering circles and was the founder and first President of the Technical Societies Council of New York in 1946; Chairman of the Engineering Societies Committee on War Production of New York in 1944; Chairman of the American Society of Mechanical Engineers, Metropolitan Section, in 1943, and is presently Chairman of their Machine Design Division. He has had many technical papers published covering the metallurgy of spring steels and non-ferrous alloys, hydrogen embrittlement, stress analysis, etc., and is the author of the Spring Design section of the new Tool Engineers Handbook.

★ ★ ★

GEORGE O. HIERS of the National Lead Company, who has long been active in ASTM activities, was elected 1st Vice Chairman. **S. R. Doner** of Raybestos-Manhattan, Inc., was elected 2nd Vice Chairman, and **A. A. Jones** of Anaconda Wire and Cable Co. was elected Secretary.

H. C. R. Carlson, Chairman, ASTM, New York District Council. ★ ★ ★ ★ ★

★ ★ ★

THE ASTM is a widely known technical society having its national headquarters in Philadelphia. It has more than 150 committees working on standards, specifications, testing, research, ordnance, and so on, and publishes material specifications and test methods which are used as standards throughout the world.

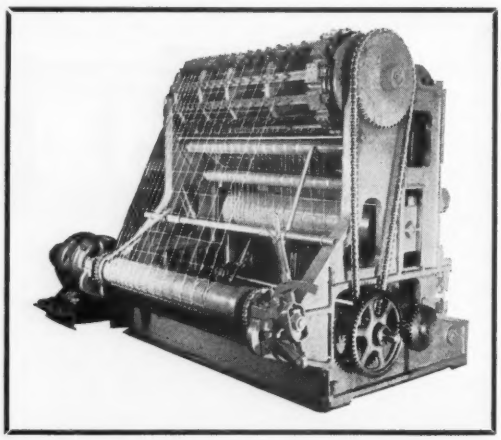
★ ★ ★

To Represent Wickwire Brothers, Inc.

WICKWIRE BROTHERS, INC., has announced the appointment of **John J. Gillis Company,** Boston, as sales representatives in the New England district.

★ ★ ★

INTERLOCKING FENCE LOOMS



- Fastest --- Most Efficient.
- Preferred by Leading Mills.
- Low Maintenance Cost.
- Wrapped Stay Fence.
- Straight Stay Wires.
- Integrated --- Space Saving.
- Replaceable Main Bearings.
- Single or Double Strands.
- Years of Low Cost Production.

Write for Detailed Information — Without Obligation

Interlocking Fence Co., Dept. L, Morton, Ill.

Specialists In Fence Looms

Riverside Metal Assigns Richard E. Pilling to Newark Sales

THE RIVERSIDE METAL COMPANY, Riverside, New Jersey, in order to offer expanded sales and service facilities to the increasing numbers of users of phosphor bronze, nickel silver, cupro nickel, and beryllium copper, has assigned **Richard E. Pilling** to assist F. M. Shelley, Jr., General Sales Manager at the Newark offices. Mr. Pilling has been at the plant in Riverside for the past year.

★ ★ ★

Firth-Sterling Tradition Carried On

FOR many years **A. R. (Gus) Zapp** served on the Wire Association Program Committee as Chairman of the Entertainment Committee as so many will recall.

★ ★ ★

FOR the 1950 Convention in Baltimore the mantle for this important end of the activities has fallen on the able shoulders of **N. W. (Mike) deBerardinis,** Sales Promotion Manager of Firth-Sterling Steel and Carbide Corporation.

★ ★ ★

MIKE'S competent and energetic handling of the task has resulted in a program that should satisfy even the hard-to-please and the standards set heretofore by Gus and by Eber Hubbard last year, we are assured will be maintained.

N. W. (Mike) de Berardinis, Sales Promotion Manager, Firth-Sterling Steel & Carbide Corporation, McKeesport, Pa.

Atlas Mineral Products Personnel Changes

GEORGE L. WIRTZ, President of the **Atlas Mineral Products Company,** Mertztown, Pennsylvania, has announced the following personnel appointments in keeping with a long range expansion program at Atlas.

★ ★ ★

EDISON C. SICKMAN, formerly Baltimore District Sales Mgr., has been appointed General Sales Coordinator. Mr. Sickman received his B.A. degree at the University of Dayton and has done work at Wittenberg College, Indiana University and Antioch College. Prior to joining Atlas he worked in various phases of management and sales in the plating supplies and metal finishing fields.

★ ★ ★

RAY RUSSELL GRAVER has been added to the Atlas Engineering Department. Mr. Graver recently received his B.S. degree in Chemistry at Muhlenberg College.

The SPECIALISTS in Wire-Straightening and Wire-Cutting!

Diameter Range — 1/16" to .005"

PRECISION - Our Motto

DON'T hesitate to call on us when you are confronted with wire-straightening problems involving close tolerances and absolute accuracy. For seventeen years we have specialized in straightening and cutting all gauges of fine wire, hard or soft, ranging in diameter from one-sixteenth of an inch down to five-thousandths of an inch. We employ gun-barrel accuracy in straightening lengths from one inch to ten feet or any fractional part thereof. Ends cut absolutely clean without burrs.

●

ASK ABOUT OUR UNEXCELLED FACILITIES FOR CLEANING AND POINTING WIRE ALREADY STRAIGHTENED AND CUT.

ALL TYPES OF WIRE...

- Nickel
- Stainless Steel
- Bronze
- Brass
- Copper
- Alloy Wire
- Music Wire
- Tag Wire
- Florist Wire

Write us today!

Manufacturers of the famous ARMA PAPER CLIP

PITTSBURGH CUT WIRE COMPANY

1112-20 GALVESTON AVENUE · PITTSBURGH, PENNSYLVANIA.

TELEPHONE: CEdar 4702

GERALD F. GILBERT, JR., who recently received his B.S. degree in Chemical Engineering from Lehigh University, has accepted a position as assistant to the Technical Director.

★ ★ ★

Goebel Advanced by Du Pont

DR. MAX T. GOEBEL, assistant technical director of the **Du Pont Company's Grasselli Chemicals Department,** has been appointed technical director, succeeding Dr. John C. Woodhouse who has undertaken a special assignment with the company.

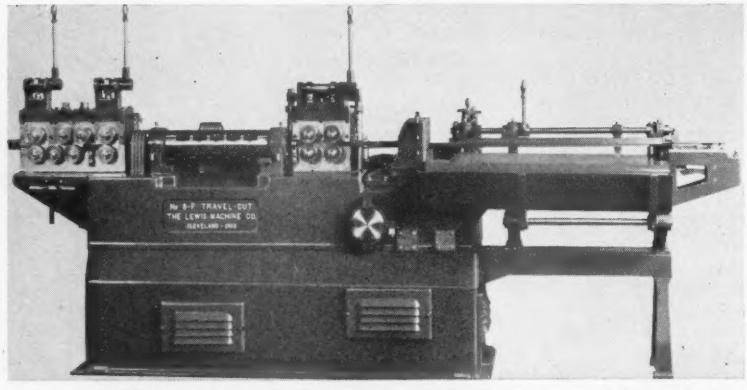
★ ★ ★

A NATIVE of Compton, Ill., Dr. Goebel attended Carthage College, Illinois, and received his A.B. and Ph.D. degrees in chemistry from the University of Illinois. He joined Du Pont in 1934 as a research chemist at the Experimental Station. In 1941 he was transferred to Cleveland as assistant manager, general research section of the Grasselli Chemicals Department, becoming manager three years later. He was made assistant technical director of the department in 1948.

★ ★ ★

CUT YOUR CUTTING COST WITH

LEWIS TRAVEL-CUT



Wire Straightening & Cutting Machines

The simplicity of design and rigid construction of the Lewis Travel-Cut makes it well suited for the most severe high-production requirements. This machine feeds the wire from the coil, straightens, gauges to accurate length, and cuts while in motion thus producing uniform diameter rod free of arbor swell and feed roll marks. It is particularly adapted to precision work on bright finished steel, brass, aluminum, stainless, and alloy wire. This method of cutting is also very efficient for short lengths such as welding rod, special bolts, etc., and increases the over-all efficiency approximately 20% over the conventional type of cut-off.

Machines built in various sizes to handle from 1/16" up to 3/4" diameter, and 1/16" to 5/8" square or equivalent area in hexagon and flat.

Exclusive Representatives

EAST: Penn Machinery Co., 117 North Third Street, Philadelphia 6, Penn.

MIDDLE WEST: Steel & Wire Machinery Co., 1017 Helmsdale Rd., Cleveland 12, O.

CENTRAL: Moslo Machinery Co., 2443 Prospect Avenue, Cleveland 15, Ohio.

WEST COAST: Hoffman & Heartt, 3005 So. Grand Ave., Los Angeles 7, California.

CANADIAN: Empire Engineering Co., 11 Wellington St. E., Toronto 1, Ontario.

CONTINENTAL EUROPE: Gaston E. Marbaix, Ltd., Devonshire House, Vicarage Crescent, London S. W. 11, England.

The LEWIS MACHINE Company
3441 E. 76th Street, Cleveland 4, Ohio

Also agents in Paris, Stockholm, Rotterdam, Brussels, Zurich, Milan, Bombay and Melbourne

H. V. May Made Ass't Plant Manager of Bridgeport Brass

THE appointment of **Harry V. May** as assistant manager of the East Main St. plant of **Bridgeport Brass Company** has been announced by Herman W. Steinkraus, president and general manager.

★ ★ ★

MR. May has been assigned to the office of **Everett Japp,** vice president and manager of the plant and will take full supervision of the division during Mr. Japp's contemplated vacation in Scotland.

★ ★ ★

Floyd Rose

FLOYD ROSE, retired Pittsburgh industrialist, died on July 30th at his summer home on Cape Cod at the age of seventy-three.

★ ★ ★

MR. Rose was a director of the Firth-Sterling Steel & Carbide Corporation of McKeesport, Pa. Before he retired last year he was Chairman of the Board.

★ ★ ★

HE was a native of Pittsburgh and a graduate of the University of Pittsburgh.

★ ★ ★

Andrew Czapak

ANDREW CZAPAK, 36, Chief Engineer of the **Volco Brass & Copper Company,** Kenilworth, New Jersey, died suddenly at his home in Elizabeth, N. J. on July eighth.

★ ★ ★

MR. Czapak was a graduate of Newark Technical Institute. He had been associated with the Volco Brass & Copper Company for 16 years, and served as a member of the Volco Planning and Management Board.

★ ★ ★

Appoints Canadian Distributor

EDGAR L. LOVE, Sales Manager, **Koiled Kords, Inc.,** New Haven, Connecticut, announces the appointment of **R. D. Fleck & Co., Ltd.,** Oshawa, Ontario, as exclusive distributor in Canada for all types of Koiled Kords.

★ ★ ★

KOILED Kords, the retractile power and communications spring-shaped cords that extend to more than five times their retracted length, have recently been approved for power applications by the Canadian Standards Association.

★ ★ ★

New Catalogs from Abroad

"A Manual for Wire Users"—A 128-page brochure bound in cloth covers issued by John Rigby and Sons, Ltd., Low Moor, Bradford, England. This is a book of information about their products and services available to customers, with useful data on wire gages, weights and lengths of steel wire in rounds, flats and shapes, together with various other tables of useful information.

★ ★ ★

"Salts of Tungsten, Molybdenum and Vanadium"—A leaflet published by Murex, Ltd., Rainham, England, listing the salts, oxides and acids of these elements produced by Murex, Ltd. This leaflet is available to our readers upon request.

★ ★ ★

"The Aluminum Industries, Ltd."—A 16-page booklet describing the opening, on April 24, 1950, of their new plant at Kundara, India. Issued as a book of welcome to those attending the opening. Aluminum, A.S.C.R. cable, a description of the plant and other interesting information are included.

★ ★ ★

"Progress"—A 64-page historical and descriptive brochure covering the Newcastle Steel Works of the Broken Hill Proprietary Co., Ltd., Melbourne, Australia. The book is profusely illustrated, showing pictures of their mines, rail and shipping facilities and, of course, the Newcastle Plant.

★ ★ ★

"Newcastle Industrial Capital of Australia" — An impressive stiff cover book put out by the Council of the City of Greater Newcastle, describing the natural resources, power, the seaport, rail and other facilities offered to industry seeking a strategic point in which to locate its business or a branch plant.

★ ★ ★

"Fifty Years of Industrial Enterprise"—An historical book, published in 1935, to commemorate the founding and growth of the extensive interests in various parts of Australia of the Broken Hill Proprietary Company, Ltd. This fine work covers 166 pages of the development of the company, at the same time providing an excellent bird's-eye view of industrial Australia and its varied natural resources. It is prefaced by a foreword from the pen of Essington Lewis, Managing Director of this far-flung enterprise.

★ ★ ★

Send in
Your Order Now
for the
1950 Wire Buyers Guide

YOU CAN'T DO BETTER THAN NRM WIRE & CABLE COVERING EQUIPMENT

1½" Package Wire & Cable Covering Unit

- Complete over-all dimensions, only 13 ft. x 4 ft. 2 in.
- 1½" oil or electrically heated extruder.
- Crosshead for wire covering up to ¼" covered diameter.
- Wire straightener.
- Dual horizontal haul-off capstans. (Variable speed.)
- Automatic driven let-off, controlled by wire tension.
- Torque controlled dual take-up with 16" reels.
- Space provided for wire heaters and spark tester.
- Maximum wire speed, 1000 ft. per minute.
- Net weight: 6400 lbs. (approx.)

● The 1½" machine shown above is typical of the precision equipment manufactured by NRM. Also available are 30" and 42" Combination Take-Up and Cooling Units for wire and cable ⅛" to ¼" and ¼" to 1½" covered diameter.

NRM wire and cable insulating crossheads and accessories are available for all sizes of extruders.

NYLON WIRE & CABLE COVERING EQUIPMENT

All sizes are available with special screws, cylinders and crossheads for covering nylon wire and cable—or may be equipped with special dies for other nylon extrusions.

NATIONAL RUBBER MACHINERY CO. General Offices & Engineering Laboratories Akron 5, Ohio

PLANTS at Akron & Columbiana, Ohio and Clifton, N. J.
AGENTS East: National Rubber Machinery Co., Clifton, N. J.
West: S. M. Kipp, Box 441, Pasadena 18, Calif.
EXPORT Plastics Machinery: OMNI EXPORT CORP. 460 4th Ave., New York 16, N. Y.

Creative Engineering

A Review of Recent Wire Patents

NO. 2,513,302, BLACK OXIDE COATED NITRIDED STAINLESS STEEL PRODUCTS, patented July 4, 1950 by Alexander L. Feild, Baltimore, Md., assignor, by mesne assignments, to Armco Steel Corporation, a corporation of Ohio.

Nitrided case-hardened stainless steel having a chromium content of about 10% to 35% is provided with an adherent black metal oxide surface film formed by treatment in a fused salt bath essentially consisting of at least one of the group consisting of sodium dichromate and potassium dichromate.

★ ★ ★

NO. 2,513,611, WIRE HELIX-FORMING CORE, patented July 4, 1950, by Edward E. Woller, Kenosha, Wis., assignor to Simmons Company, New York, N. Y., a corporation of Delaware.

The core has a groove in its outer surface terminating in a spiral and of a size to accommodate the wire and form it into a helix when the wire is propelled through said groove, this shaft also having formed on its outer surface a discharge channel in spaced relationship with the wire-forming groove. The core has one or more transverse openings connecting the groove and the channel whereby material wiped from the wire passing through this wire-forming groove is discharged through the channel.

★ ★ ★

NO. 2,513,759, WIRE CLOTHESPIN, patented July 4, 1950, by Sebastian Tarallo, Middletown, Conn.

This clothespin is formed of two lengths of wire, partly twisted together and provided with three loops.

★ ★ ★

NO. 2,513,794, METHOD OF TESTING ELECTRIC CABLES, patented July 4, 1950, by Richard D. Gambrill, Baltimore, Md., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York.

More specifically the method is for locating a previously detected fault in the insulation positioned between a lead sheath and a metallic shield of lightning protected cable.

★ ★ ★

NO. 2,513,916, APPARATUS TO COIL SPRINGS FROM A STRAND OF WIRE, patented July 4, 1950, by Harold C. R. Carlson, Brooklyn, N. Y.

Either of two oppositely-rotating shafts is adapted to releasably mount an arbor thereon for rotation and for association with a reciprocating carriage which is moved to a predetermined position simultaneously with the rotation of the arbor.

★ ★ ★

NO. 2,514,251, COIL-WINDING HEAD, patented July 4, 1950, by Noble E. Moore and George R. Gillgrass, Davenport, Iowa, assignors of one-third to Lyster L. Brunson, Davenport, Iowa.

Wire receiving blocks are provided for the coil-winding head which blocks may be moved laterally to adjust the size of the coils wound thereon.

★ ★ ★

NO. 2,514,464, SELF-CLOSING SAFETY PIN, patented July 11, 1950, by John A. Benditt, Philadelphia, Pa.

The pin is formed from a single strand of wire. There are 6 claims.

★ ★ ★

NO. 2,514,475, SPRING, patented July 11, 1950, by Joseph C. Collette, Rock Falls, Ill.

This spring is for use in spring cushions, matresses and the like and the invention resides in the two terminals of specific construction provided to facilitate tying.

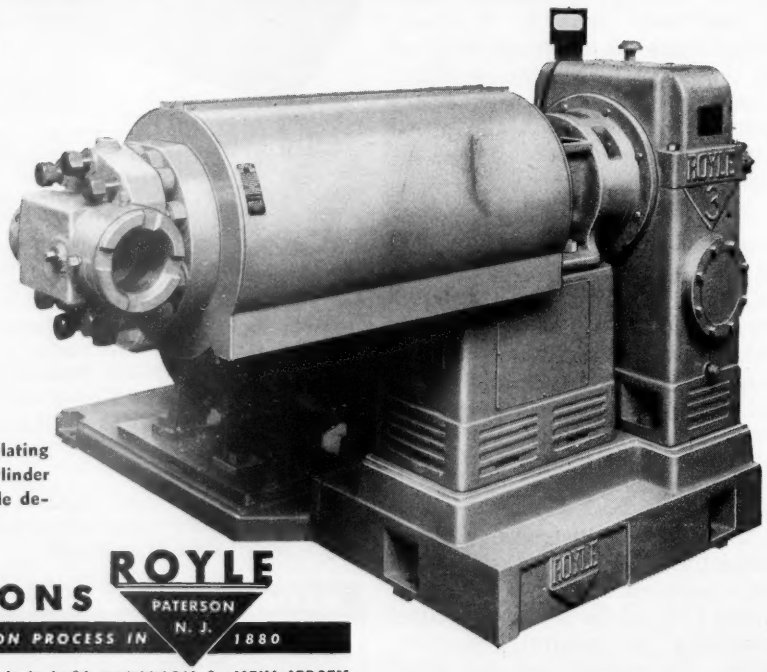
★ ★ ★

NO. 2,514,508, CORROSION PREVENTION, patented July 11, 1950, by

Complete Description and Drawings of Patents May Be Had for 50 cents, outside the United States and Canada $1.00. Address, Wire & Wire Products, 300 Main St., Stamford, Conn.

ROYLE *for WIRE INSULATING*

- **Continuous Vulcanizing Machines for Rubber Wire Insulation**
- **Plastic Wire Insulation Machines**
- **Strainers • Cooling Troughs**
- **Light Wire & Cable Capstans**
- **Motorized Take-Ups**
- **Temperature Control Units for Extrusion Processes and other industrial uses**



ROYLE # 3 Plastic Wire Insulating Machine. Double extended cylinder enclosed in insulating jacket, side delivery head.

JOHN ROYLE & SONS ROYLE PATERSON N. J. 1880

PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England — James Day (Machinery) Ltd. — REgent 2430
Home Office — J. W. VanRiper — SHerwood 2-8262
Akron, Ohio — J. C. Clinefelter — JEfferson 3264
Los Angeles, Cal. — H. M. Royal, Inc. — LOgan 3261

PATERSON 3, NEW JERSEY

Leslie G. Nunn, Jr., Tulsa, Okla., assignor to Standard Oil Development Company, a corporation of Delaware.

A method for inhibiting corrosion of ferrous metal in contact with an aqueous fluid containing hydrogen sulphide is provided which comprises incorporating in the aqueous fluid a urea formaldehyde condensation product which is at least capable of being colloidally suspended in the aqueous fluid, said condensation product being used in a small but sufficient quantity to inhibit this corrosion.

★ ★ ★

NO. 2,515,022, METHOD OF TINNING COPPER WIRE, patented July 11, 1950, by Clermont J. Snyder and Willis G. MacLelland, Hastings-on-Hudson, N. Y., assignors to Anaconda Wire and Cable Company, a corporation of Delaware.

The method is intended to produce on the surface of the wire a continuous, adherent metallic coating capable of inhibiting corrosion and of facilitating soldering and capable of being passed through a steel fabricating die without frictionally binding in the die.

★ ★ ★

NO. 2,515,488, PROCESS OF CLEANING AND COATING FERROUS METAL, patented July 18, 1950, by Ernest R. Boller, Marion, Ind., and Lowell D. Eubank, South Euclid, and Clarence A. Littler, Maple Heights, Ohio, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del., a corporation of Delaware.

In this galvanizing process the steps comprise supporting a molten zinc chloride layer upon and in contact with a molten zinc bath, passing a ferrous article, as wire, into and out of this supported zinc chloride layer only, and then passing the ferrous article while still hot through a molten zinc-aluminum bath which does not contain more than about .05% of iron.

★ ★ ★

NO. 2,516,008, COMPOSITION AND PROCESS FOR TREATING METAL SURFACES, patented July 18, 1950, by John C. Lum, East Orange, N. J., assignor to Westinghouse Electric Corporation,, East Pittsburgh, Pa., a corporation of Pennsylvania.

More specifically this is a process of applying phosphate coatings on metals, wherein simultaneous cleaning and activating of the surfaces of metals consisting of iron zinc, cadmium, aluminum and alloys in which these metals predominate, is effected to enhance the subsequent formation of protective phosphate coatings thereon.

★ ★ ★

NO. 2,516,030, INSULATED WIRE SUITABLE FOR HIGH-TEMPERATURE APPLICATIONS, patented July 18, 1950, by Jack Swiss, McKeesport, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania.

About the wire conductor is a double coating of a polyesteramide resinous enamel with glass fibres between the two, and an outer coating of organopolysiloxane resin.

★ ★ ★

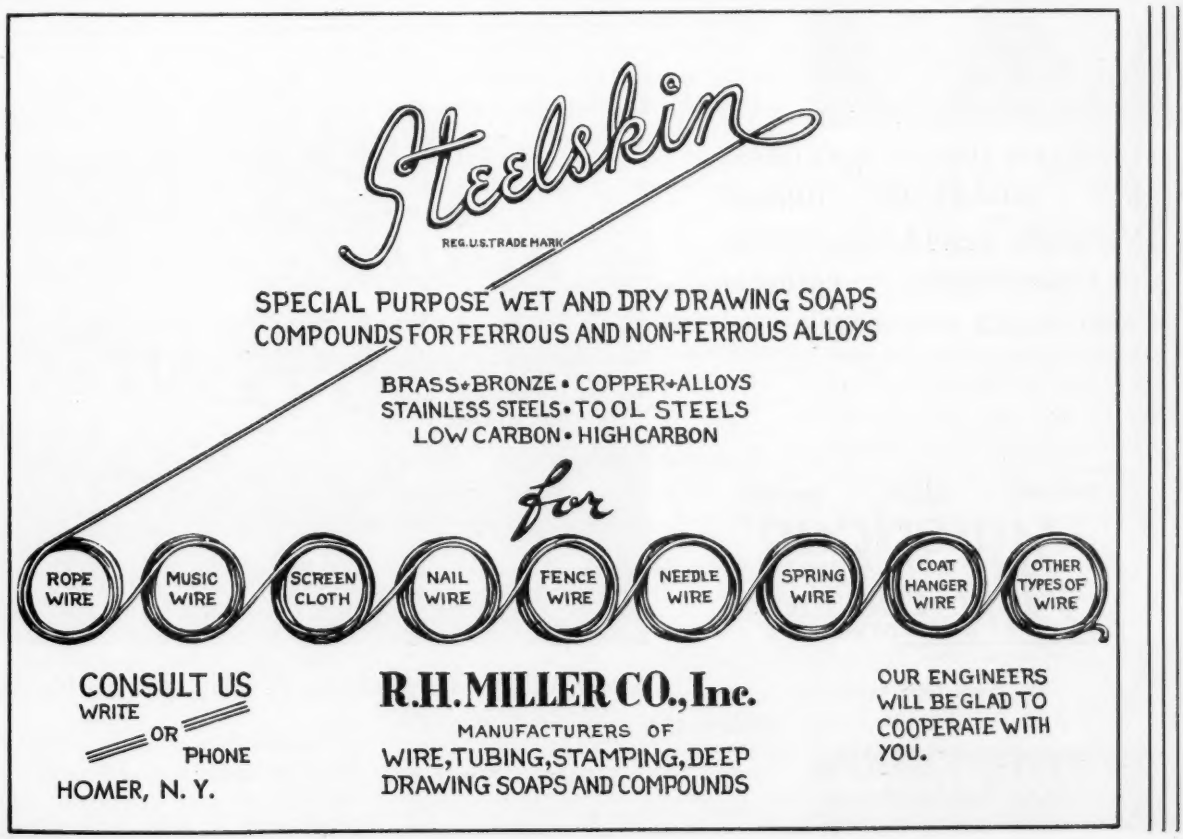
NO. 2,516,139, METHOD OF AND MATERIAL FOR TREATING FERRIFEROUS METAL SURFACES WITH MANGANESE PHOSPHATE COATING SOLUTIONS, patented July 25, 1950, by Joseph Mazia, Philadelphia, Pa., assignor to American Chemical Paint Company, Ambler, Pa., a corporation of Delaware.

The method consists in preparing an acid manganese phosphate bath containing the ions of a tartaric acid other than mesotartaric acid in quantity sufficient to inhibit "slugging out" of metallic phosphate, and treating the surface with the bath to form the desired coating.

★ ★ ★

NO. 2,516,248, METHOD AND APPARATUS FOR COOLING RODS, patented July 25, 1950, by James E. O'Brien, Baltimore, Md., assignor to Bethlehem Steel Company, a corporation of Pennsylvania.

In order to reduce scale formation on hot ferrous rods, the inventor forms the hot rod at temperature over 1500°F., into a coil, advances the coil to a predetermined stopping position, lowers a lid onto the coil, blows air into the center of the coil and outwardly through its convolutions until the coil is cooled below approximately 100°F., lifts the lid from



the cooled coil, and removes and further processes the coil.

★ ★ ★

NO. 2,516,566, SPRING CUSHION, patented July 25, 1950, by Henry F. Hager, Chicago, Ill., assignor of one-half to Henry F. Hager, Jr., Mass l on, Ohio.

The wire coils are so constructed to permit pivotal movement between the end coils under the application of force on the helical in an axial inward direction with respect to the axis of the coils and restrict pivotal movement of the coils in the opposite direction.

★ ★ ★

NO. 2,516,685, PROCESS OF PREPARING IRON AND ALUMINUM SURFACES TO RECEIVE ORGANIC COATINGS AND SOLUTION THEREFOR, patented July 25, 1950, by Alfred Douty, Elkins Park, and Eugene Snyder, Philadelphia, Pa., assignors to American Chemical Paint Company, Ambler, Pa., a corporation of Delaware.

In the intermediate step which is the final chemical treatment prior to the application of an organic coating, the inventors provide a final rinsing of the surface with a dilute aqueous solution having a surface tension lower than 50 dynes/cm., and having a pH value not exceeding 5, which solution consists essentially of water and from .01% to .10% of an acid component of chromic acid, phosphoric acid, or mixtures thereof, and a surface-active component consisting of a non-ionic wetting agent operative to reduce the surface tension of the solution.

★ ★ ★

NO. 2,516,734, APPARATUS FOR WINDING WIRE ON AN ANNULAR BODY, patented July 25, 1950, by Hendrik Jan van den berge and Cornelis Gerardus Schramyer, Eindhoven, Netherlands, assignors to Hartford National Bank and Trust Company, Hartford, Conn., as trustee.

More specifically, the invention resides in a wire tensioning device. There are 5 claims.

★ ★ ★

NO. 2,516,751, IDENTIFIABLE ELECTRIC CONDUCTOR, patented July 25, 1950, by Grover W. Brown, Wyckoff, N. J., assignor to The Okonite Company, Passaic, N. J., a corporation of New Jersey.

About the wire conductor and its dielectric sheath is a second sheath of vulcanized material faced with a colored stratum vulcanized thereto disposed about the first sheath with the colored stratum adjacent the dielectric material, a ridge extending continuously along the surface of the second sheath, the colored stratum extending into this ridge but lying wholly beneath the surface of the same, the first and second sheaths being vulcanized to each other.

★ ★ ★

NO. 2,513,859, METHOD OF ELECTROPLATING OF TIN ON FERROUS STRIP, patented July 4, 1950, by Charles E. Glock, Baltimore, Md., assignor to Crown Cork & Seal Company, Inc., Baltimore, Md., a corporation of New York.

A continuous, unplated ferrous strip is treated by travel through an alkaline tin plating bath in which the strip is made the anode for about 2 to 30 seconds at a current density of about 10 to 100 amperes per square foot, and then immediately thereafter electroplated with tin in an alkaline tin plating bath of the same composition where the strip is made the cathode.

★ ★ ★

Greening Company's Roots Four Centuries Deep

(*Continued from page 729*)

Netting

POULTRY Netting of 1- and 2-inch mesh manufactured in the "Lay Flat" (or straight-line) design and the regular hexagon mesh are made here from galvanized wire drawn in the Company's own Wire Mill.

★ ★ ★

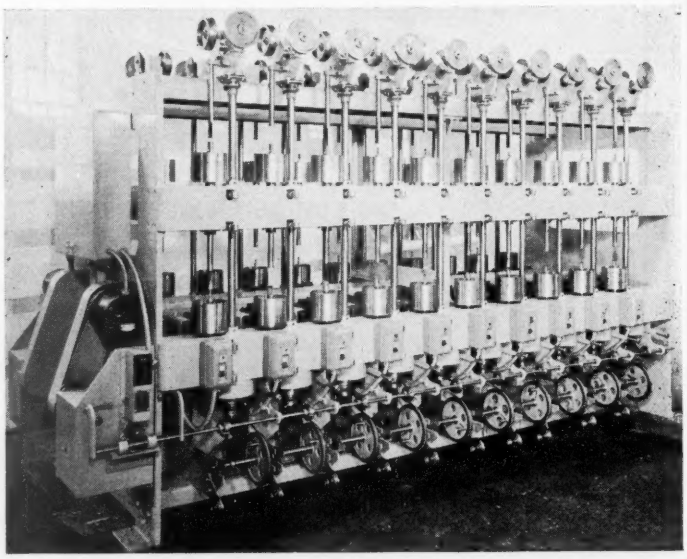
COMPLETE LINE OF WIRE DRAWING, ENAMELING, TINNING, WINDING, INSULATING, TAPING, GLASS-COVERING, PANNING, AND ALLIED MACHINERY.

EST. 1855 AIMco INC. 1915

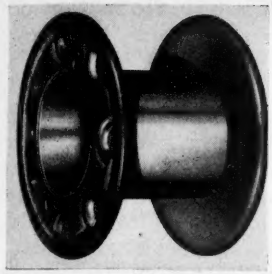
"American" AIM INSULATING MACHINERY COMPANY

REG. U.S. PAT. OFF.

517 West Huntingdon St.
Zone 33
PHILADELPHIA PENNSYLVANIA U.S.A.



Model 1-D-20 MBB Insulation Winding Machine No. 957.

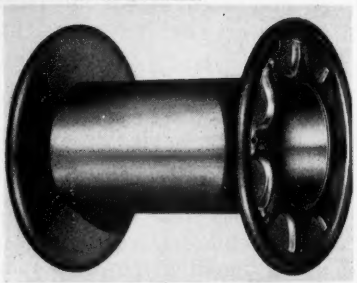


whatever your spool requirement

may be . . . .

HUBBARD

HAS IT



FOR EXAMPLE . . . if you require process spools, perhaps Hubbard Steel Process Spools will meet your needs exactly. They provide extreme rigidity, are accurately balanced, and are built in all standard sizes for wire drawing and processing.

Wha'ever your requirement may be, remember Hubbard.
Write for information and prices.

HUBBARD SPOOL COMPANY
1624 Carroll Ave., Chicago 12, Ill.

Hubbard

STEEL SPOOLS AND REELS . . . METAL BOUND SPOOLS AND REELS . . . STEEL TRAVERSES . . . LIGHT WEIGHT REELS WOOD REELS

Perforating Department

METALS for a great many uses are perforated in this department and some of the main uses of the products produced there include perforated copper and monel for paper mills, perforated steel for trommel screens, perforated zinc for grain-cleaning machinery and perforated materials for many other uses.

★ ★ ★

Other Departments

IN addition to the above-mentioned departments a galvanizing and tinning department is maintained, as well as a department especially established for cutting and straightening wire and wire rod for use in special applications such as pump rods, etc.

★ ★ ★

THE Company also operates, of course, its own machine shop, which is responsible for maintenance and repairs of machinery and equipment; also an up-to-date carpenter shop which makes all the crates, boxes, wire rope reels, etc., and a modern paint tower in which the insect screening is painted.

★ ★ ★

Engineering and Research

A LARGE and competent Engineering Staff is constantly seeking improvements in manufacturing processes, as well as in developing new machines and ideas for the Company. A Research Department is in close touch with new developments, both in processing and end-use of the Company's products. The Chief Engineer is J. W. Galloway, B.Sc., P.E., A.S.M.E., A.S.M.

★ ★ ★

A SEPARATE Wire Rope Engineering Department is maintained under the direction of W. E. Brown, B.Sc., M.E.I.C.

★ ★ ★

And here's why . . .

Mason spools save you money because they meet all your requirements—yet cost you less!

It's as simple as that! Mason's integrated production facilities keep costs down—and the savings are passed on to you. Mason's own coating and lithographing department offers you faster service.

Take advantage of Mason's high-quality — low-price policy now.

Write for further information or for a specific quotation.

MASON CAN COMPANY
1949 DEXTER RD., EAST PROVIDENCE 14, R. I.

Yarns for Electric Wire

Proven by wide usage — greater efficiency in Serving and Braiding when packages of Silk, Nylon or Acetate are the product of our mills.

Producers also of Tracer and Marker Trams that meet Underwriters' Laboratory Specifications.

Consult us on your specific problems.

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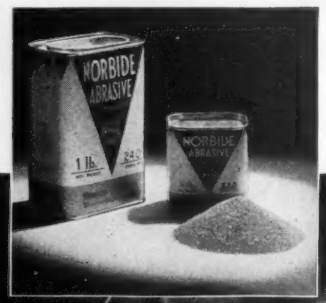
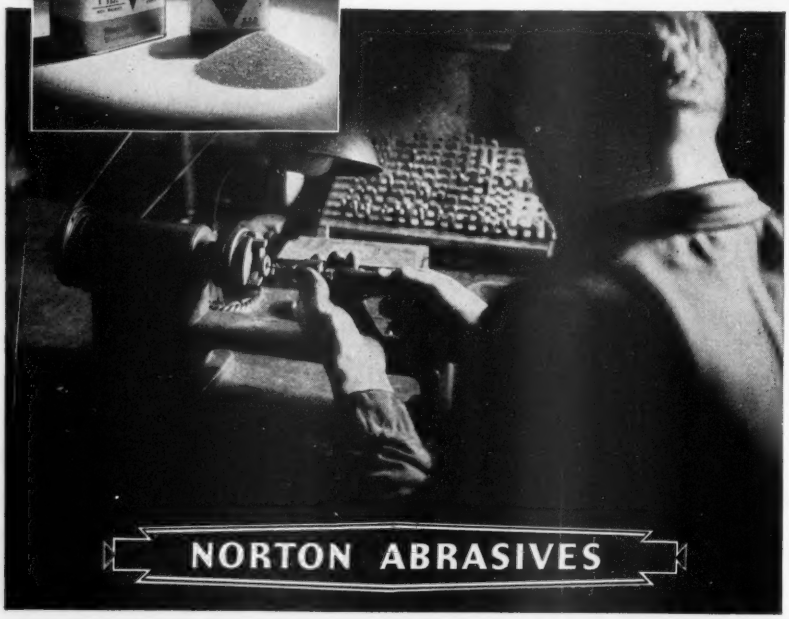
NORBIDE Abrasive: Effective Economical



This abrasive—second only to the diamond in hardness and 150 times less expensive—does an efficient job of cutting and semi-finishing cemented carbide wire drawing dies.

NORTON CO. — Worcester 6, Mass.



Du Pont Gets into Production on "Teflon"

A NEW unit of the **Du Pont Company's** plastics plant near Parkersburg, W. Va., has gone into commercial production of "Teflon" tetrafluoroethylene resin, an industrial plastic highly resistant to chemicals and heat. It had been made only in small quantities before at Arlington, N. J.

★ ★ ★

THE unit's full operation marks completion of the first expansion at the Parkersburg plant which less than two years ago began commercial manufacture of nylon molding powder, monofilament and tapered bristles; "Lucite" acrylic resin, and "Alathon" polythene resin.

★ ★ ★

"TEFLON" embodies a combination of chemical inertness, heat-resistance and electrical insulating properties available in no other single material. Development of the plastic has given the chemical industry corrosion-proof gaskets and valve packings that are essentially permanent. The electrical industry uses "Teflon" as insulation which will withstand continuously temperatures up to 500 degrees F., in motor windings and other applications.

★ ★ ★

THE manufacturer of "Teflon" tetrafluoroethylene resin at Parkersburg begins with "Freon 22" fluorinated hydrocarbon, a gas, as the raw material. This is broken down by heat to yield tetrafluoroethylene monomer, which is purified by distillation and then reacted to produce "Teflon" by a process of polymerization, or the union of small molecules to make "giant" ones.

★ ★ ★

FOR the next few months the unit will produce granular "Teflon" only. Further expansion, however, is under way for the manufacture of the new "Teflon" suspensoid, a suspension of minute

particles of the plastic in a liquid, from which wire extrusion compounds and enamels, and corrosion-resistant finishes have been developed.

* * *

Russell, Burdsall & Ward Introduces New Type Screw Fastener

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY, Port Chester, N. Y., has introduced a new "washerless" screw, the "Spin-Lock," in hex, pan, truss or at heads, which the company recommends for faster, tighter, less costly assembly.

* * *

THE feature of this product is the patented ratchet-like teeth on the underside of the head, which the company says eliminates the step of adding a washer.

* * *

THE screw is one piece, with no washer to add. It can therefore be hopper-fed. RB&W states it cuts inventory and purchasing costs, as there is just one piece to stock and buy. The company adds that locking power is positive, as there are no parts to cant or fall off; fastening is neater and safer.

* * *

MacWhyte Install New Patenting Furnace

THE results from a new patenting furnace recently installed by the **MacWhyte Company,** wire rope manufacturers, are said to have exceeded expectations, both as to economy and output.

* * *

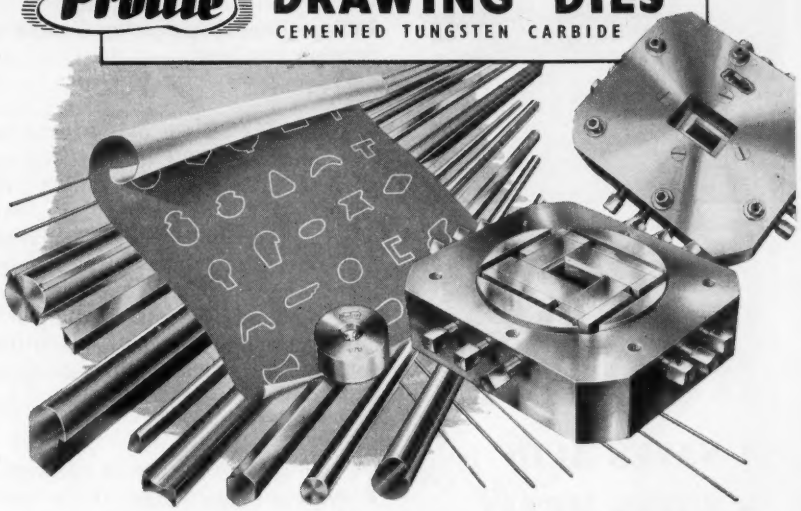
THEIR plant includes both wire and wire rope mills. The process of patenting in rope making is critical and for this purpose the company's engineers designed and built a new 50-foot continuous, four-zone wire-patenting furnace, for which **Archie Naysmith,** Plant Engineer, and **Walter Bloxdorf,** Chief Metallurgist, are mainly responsible.

* * *

BABCOCK AND WILCOX firebrick was used to line the fur-

Leading British Manufacturers use

Prolite **DRAWING DIES**
CEMENTED TUNGSTEN CARBIDE



THE 'PROLITE' RANGE OF MUREX METALLURGICAL PRODUCTS *Includes:*

Tungsten Carbide Tips and Tipped Tools, Bar, Tube and Wire Drawing, Extruding and Metal Forming Dies and Die Pellets, Cold Heading Dies, Nozzles, Guides, Bushes and other Wear Resisting Parts.

MUREX LTD. *(Powder Metallurgy Division)* RAINHAM · ESSEX · ENGLAND
London Sales Office: Central House, Upper Woburn Place, London, W.C.1.

Diamond Distributors Inc.

MANUFACTURERS OF

PRECISELY GRADED

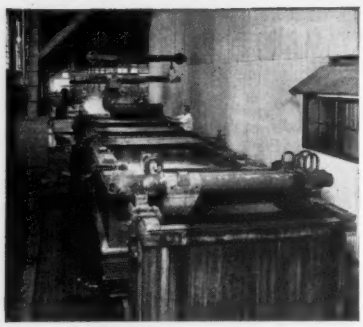
DIAMOND POWDER

SERVING INDUSTRY'S

SPECIALIZED NEEDS

IDA MEMBER Industrial Diamond Association of America, Inc.

40 West 40th Street • New York 18, N. Y.



"Rodine" ushered in a new era in pickling. It has saved vast amounts of acid and metal all over the world.

RODINE®

- **SAVES ACID**
- **SAVES METAL**
- **SAVES MONEY**

"Rodine" more than pays for itself in savings of acid and metal. Specify "Rodine" for improved pickling production.

"Cuprodine"

"Cuprodine" in a simple chemical immersion process coats both carbon and stainless steels with a thin, bright, adherent layer of copper. This coating prolongs die life and improves the drawing of wire, rod and tubing.

American Chemical Paint Co.
AMBLER PENNA.

nace, **Wheelco** Xactline Capacitrols control the four heating zones, **Barber-Coleman** motors actuate the North American variable port valves and burners made by **Eclipse Fuel Engineering Company** furnish the heat.

★ ★ ★

MACWHYTE's old furnaces handled 1500 lbs. of rod or wire per hour; the new one is patenting 4000 lbs. per hour. An efficiency of 35% was anticipated, but operating data over several months of experience show it to be 85%. Messrs. Naysmith and Bloxdorf state that the new patenting setup is so efficient that pickling time has been reduced 30%.

★ ★ ★

IT will interest many of our readers to note that there will shortly appear in **Wire and Wire Products** a technical article by Mr. Bloxdorf on the patenting wire rods.

★ ★ ★

New Folder on Quality Control

A NEW 4-page folder titled "Statistics Can Change A Job Classification" is available from New York University College of Engineering.

★ ★ ★

TEXT material was prepared by **W. A. MacCrehan, Jr.**, Assistant Professor, Department of Administrative Engineering, and is illustrated with charts, graphs and tables.

★ ★ ★

THE new folder discusses consumer attitude on quality, organizing a successful department, applying the statistical approach, specifications, raw material, gages and gaging methods, actual floor production, final inspection, and customer complaints.

★ ★ ★

COPIES of the new folder may be obtained from V. W. Palen, Bureau of Public Information, New York University College of Engineering, New York 53, N. Y. Enclose 10c per copy to defray cost of handling and mailing.

★ ★ ★

Product of MODERN SCIENCE and MASTER CRAFTSMANSHIP

PHILIPS Master-Made DIAMOND DIES

● The tools of modern science are combined with the skills of the master craftsman in the production of PHILIPS *master-made* Diamond Dies.

Every diamond selected for cutting is examined by PHILIPS X-ray diffraction apparatus to determine the proper direction for drilling to provide longer life and greater satisfaction to the user. Master craftsmen of long experience, working under the most modern conditions, drill each diamond to precision tolerances. Result? The finest diamond dies obtainable—now available to American industry under the trade name of NORELCO Diamond Dies.

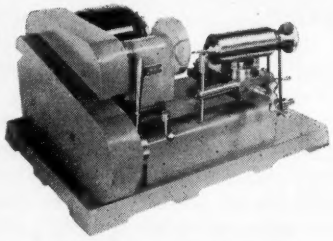
All sizes . . . from .000275 to .100 are available at competitive prices. Let us consult with you concerning your requirements.

Norelco

NORTH AMERICAN PHILIPS COMPANY, INC.

Dept. FE-9, 100 East 42nd St., New York 17, N.Y.

ROOS
DYKREX
MACHINE
CORRECTS
AND
REJUVENATES
YOUR
DIES
to original condition



IT'S MORE
than a
POLISHER

IT'S MORE
than a
LAPPER or
RIPPER

It corrects the die by straightening out any eccentric entrance angles on the dies.

ROOS TOOL
& Mfg. Co.
33-35 BLOOMFIELD AVENUE
NEWARK 4, N. J.

Distributed by
Eastern Carbide Corp., New Rochelle, N. Y.
Carboloy Co. — Detroit — Pittsburgh — Newark—and all Principal Cities.
In Canada — Canadian General Electric Co., Toronto, Canada

Houghton Elects New Directors

E. F. HOUGHTON & CO., industrial oils and leathers manufacturers, announces the election of two new members to the Board of Directors at a meeting held July 21st at the company's main office, 303 W. Lehigh Ave., Philadelphia.

★ ★ ★

THE newly named members are **D. C. Miner,** advertising manager who joined the firm in 1934, and **William K. Barclay, Jr.,** Philadelphia resident partner of Stein Bros. & Boyce.

★ ★ ★

MR. Miner is also president of Exhibitors Advisory Council, a director of National Industrial Advertising Association and past president and director of Eastern Industrial Advertisers, Philadelphia Chapter of the N.I.A.A.

★ ★ ★

MR. Barclay is past president and now member of the board of the Executive Committee and Finance Committee of the Philadelpia-Baltimore Stock Exchange.

★ ★ ★

Phosphate Coating Bulletin and Chart

A NEW bulletin on Phosphate Coatings and processes, together with a four-page selection chart, have been published by **American Chemical Paint Company,** Ambler, Pa.

★ ★ ★

IN text matters and in tabular form these publications indicate the various types of phosphate coatings the applications for which each is fitted and the equipment and processes that are involved. This material is presented in a practical and useful form for anyone who may want to prepare metal surfaces for painting or bonding or for using coatings for wire drawing.

★ ★ ★

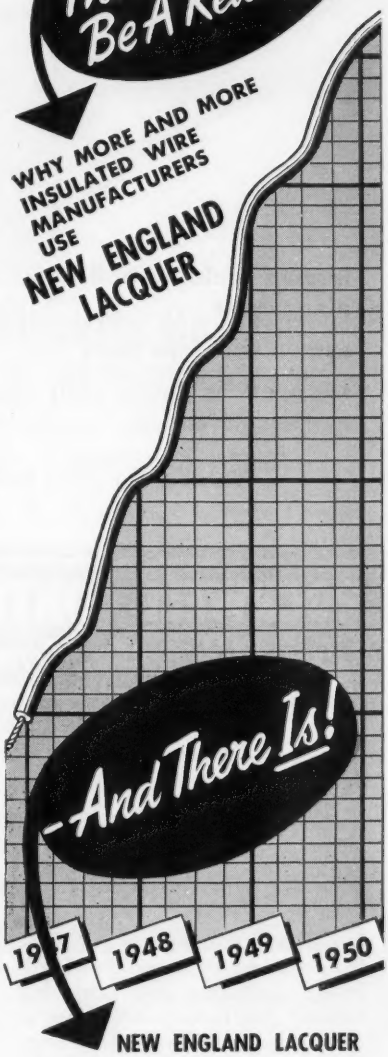
COPIES of the Bulletin may be secured by asking for No. P-100-46. The chart is also available.

★ ★ ★

SALES UP 250%
SINCE 1947!

There MUST Be A Reason—

WHY MORE AND MORE INSULATED WIRE MANUFACTURERS USE NEW ENGLAND LACQUER



NEW ENGLAND LACQUER
. . . is tailor-made to your special requirements! Heat-Resistant — Flexible — Flame-Proof — Clear — High Dielectric Retention.

Consult us on all coating problems.

NEW ENGLAND LACQUER CO.
KING PHILIP ROAD
EAST PROVIDENCE, R. I.

If it's twisted folded pressed crushed shaped braided woven paper

TWITCHELL makes it

treated braiding and wrapping yarns

treated wire-rope cores

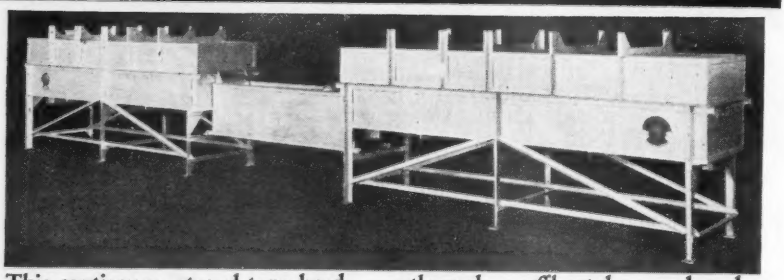
slit kraft or jumbo rolls for crushing and wrapping operations.

treated fillers for 2- and 3-wire non-metallic sheathed cable, varnished cambric, shipboard, parkway, and other power cables.

E. W. TWITCHELL INC.

Third & Somerset Streets, Philadelphia 33, Pa.

ROCKWELL CONTINUOUS FURNACES
for Wire Hardening and Drawing



This continuous, strand type hardening, quenching and tempering furnace for carbon steel wire is one of many automatic heat treating units built by Rockwell for clean or bright heat treatment of steel, stainless steel or non-ferrous metal wire. The work travels through muffle tubes under desired atmosphere; heating may be gas or electric. The unit may be furnished with unreeling stands and coiling equipment. Write for Bulletin No. 432 on batch and continuous wire mill furnaces.

ROCKWELL ALSO BUILDS — *Coil winding machines, reels and spools; pickling, brushing, cleaning, washing, finishing, drying and handling equipment; ovens and dryers; special fabrications; non-ferrous rod mills.*

ROCKWELL SINCE 1888 BUILT

FURNACES • OVENS • SPECIAL MACHINERY

W. S. ROCKWELL COMPANY

242 ELIOT STREET • FAIRFIELD, CONN.

In Canada: Francis Hankin & Co., Ltd. Montreal & Toronto

"Handbook on Designing for Quantity Production"

THIS handbook of the above title is edited by **Herbert Chase,** M.E. It contains 564 pages and sells for $7.50. Published by the McGraw-Hill Book Company, 300 West 42nd Street, New York.

★ ★ ★

THE work provides engineers with tested rules to follow in designing parts for economical production. It gives complete explanations of high-production processes, offering sound pointers on what to do and what to avoid in designing for each.

★ ★ ★

PART I includes specific chapters devoted to the most important types of metal products. It covers the design of die-forged parts, die castings, permanent-mold castings, screw-machine products, stampings, plastic moldings, and many other metal products. New chapters take up wire forms, permanent-mold castings, impact extrusions, and sintered powder compacts.

★ ★ ★

Adamas Offers Wire Drawing Die Catalog

AN attractive four page catalog detailing full specifications for standard wire, bar, and tube drawing dies is available from the **Adamas Carbide Corporation.**

★ ★ ★

THIS catalog, convenient for a three ring binder or filing, includes the recently agreed on new size die nibs and standard casing sizes. Also shown are tolerances, information on how to order, and lists of other Adamas products for wire drawing, heading and allied fields.

★ ★ ★

CATALOG D-749 may be obtained upon request to Adamas Carbide Corporation, 900-998 South 4th Street, Harrison, N. J.

★ ★ ★

IN Part II the types of metal products are compared with one another, and specific reasons given as to why one type is chosen over some other in actual industrial applications. New sections compare sintered powder compacts with other high-production parts and malleable-iron castings with equivalent stampings and forgings.

★ ★ ★

REFLECTING advanced production methods and the experience of well-recognized authorities, this handbook is invaluable in effecting designs that perform all required functions and that take full advantage of the economies of various production processes.

★ ★ ★

Extruded Zinc Anodes

OFFERED only by the **Hanson-Van Winkle-Munning Company**, Matawan, New Jersey, extruded zinc anodes, either as cylinders for ball anode containers or in any desired length in elliptical form, bring many advantages to users.

★ ★ ★

CORROSION characteristics are considerably improved and the metal structure is more dense. They are 99.9% pure and are available in pure zinc ZX, or combined with aluminum to make the well-known H-VW-M ZAX anode. They will not polarize excessively or produce sludge. When these ZA anodes are used, solutions remain clean and metal concentration has a high degree of stability.

★ ★ ★

THEY are recommended for use in both cyanide and acid zinc solutions.

★ ★ ★

Sjogren WEDGE GRIP

Used by Wire Men Who Want the Best!

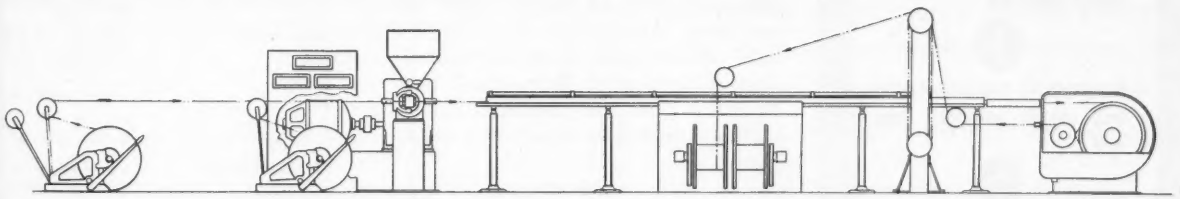
SJOGREN TOOL AND MACHINE CO., INC.

WIRE PULLERS • WEDGE GRIPS • JAWS FOR ALL MAKES OF PULLERS AND TESTING MACHINES • CAGE ROLLERS • SWAGING HAMMERS • POINTING DIES • WIRE SPOOLERS

14 SWORD STREET
AUBURN
MASSACHUSETTS

Represented in Canada by THE LARSON CO., 98 Wellington St., West, Toronto, Ont.

When you write an ADVERTISER for prices and information, PLEASE MENTION the fact that you saw his ad in WIRE AND WIRE PRODUCTS. It identifies your inquiry and expedites service.



DAVIS-STANDARD THERMO-PLASTIC WIRE INSULATING EQUIPMENT

COMPLETE EQUIPMENT FOR PLASTIC WIRE INSULATING

THE STANDARD MACHINERY COMPANY, MYSTIC, CONN., U.S.A.

Established in 1848 *Incorporated in 1875*

Export Office: Drexel Bldg., Philadelphia 6.
Canada: Williams & Wilson, Ltd., Montreal, Toronto.
Chicago: Grant Engineering Co.,
Pacific Coast: W. H. Del Mar Co., 5140 Crenshaw Blvd., Los Angeles.

STANNOUS SULPHATE

for IMPROVED LIQUOR FINISHING of STEEL WIRE!

Stannous Sulphate, used for either straw color or white liquor finishing, provides these outstanding advantages:

1. A superior, smoother coating
2. Positive control — making it possible to produce uniform coatings day in and day out
3. Easier to use — fewer operations involved
4. Economy — requires use of less copper sulphate, less acid
5. More Economy — reduces tin losses by eliminating high tin sludging.

Write for information on how to use Stannous Sulphate to best advantage in your liquor finishing.

METAL & THERMIT CORPORATION

100 East 42nd St., New York 17, N. Y.

Data Sheet Describes Granodine

A NEW data sheet, entitled "Touch-up Grandodine" has been issued by **American Chemical Paint Co.**, Ambler, Pa., describing the properties and methods of using this chemical compound for anchoring paint to steel. Granodine forms a zinc phosphate coating that is in itself protective. It can be sprayed on, applied with a brush, or in production operations, put on in a dip tank. Please ask for data-sheet No. 7-13-50-3 in requesting a copy.

★ ★ ★

Manual on Laminate for Insulation

A DESCRIPTIVE manual on GLASTIC MM, a Fiberglas-reinforced alkyd base polyester laminate for electrical insulation has been issued by **Laminated Plastics, Inc.**, 1823 E. 40th St., Cleveland 3, Ohio.

★ ★ ★

THE manual provides complete technical data on the material, with practical information on its handling, uses and properties. Copies may be obtained upon request.

★ ★ ★

Hunter Reorganizes Sales Department

THE HUNTER SPRING COMPANY of Lansdale, Pa. announces the complete reorganization of its sales force under the direction of **Orrin G. Meyers,** Sales Manager. The move involves seven field engineers of which three are new men. Associated with the new field service plan is a new allocation of territories throughout New England and the middle Atlantic states, and a new quota-and-bonus plan.

★ ★ ★

THE new men are **James P. Glidden, Donald A. Beardsworth** and **Joseph E. Curry.** The veteran field representatives for Hunter are **Bill Sohl, Del Bennett,** and **Sam Whiteley. John Sigafoos,** the seventh man, has previously worked on sales service work out of the plant in Lansdale, Pa., but will now take a major territory.

★ ★ ★

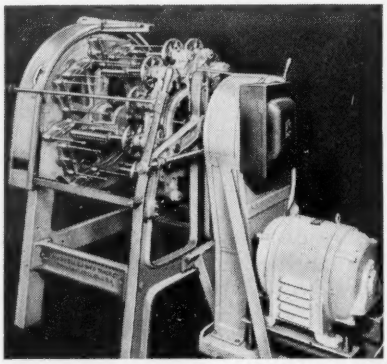
YOU CAN BUNCH small diameter WIRES

on the SINGLE-TWIST PRINCIPLE — Assuring

PERFECT BALANCE and EVEN BUNCH

with this

12-Spindle Horizontal Buncher



Like all H-D equipment, this machine reflects more than 80 years of "know-how" combined with the most advanced technological developments. We can help you solve many of your production problems. Write our engineering department today. This may be your first step to increased efficiency.

The limits of the twisted bunched diameter are .012" to .030" The flyer speed is 2000 R.P.M. All flyers and spindles are ballbearing mounted.

TAKE-UP SPOOL. 5" diameter x 4" traverse x 2¾" barrel. Protected capacity 10.5 lbs. Automatic adjusting tension control.

TWIST RANGE. Capstan controlled overall range 1.0" to .10" lay. Individual machine range 3.3 to 1 ratio of above. For example—.15 to .50 inch lay.

DRIVE. Motor drive with clutch pick-up for controlled starting.

FLOOR SPACE. Machine 5' 6" x 3' 6". Creel space depends on maximum number of wires being bunched.

FOOTAGE COUNTER. Can be installed to stop the machine at predetermined footage requirements.

POSSIBLE USES. The machines are being successfully operated on Litz Wires that fall within the range of the machine, Fourdrinier Wire and many specialties where a precision bunch is required.

HASKELL-DAWES MACHINE COMPANY, INC.

Wire Bunchers, Wire Stranders, Special Twisters, Tubing Twisters, Cordage Formers and Layers.

2231 E. ONTARIO STREET
PHILADELPHIA 34, PA.

Cable Address "DAWCO" Philadelphia

Stainless Steel Recording Wire

(*Continued from page 732*)

qualities, performance and physical characteristics of the finished product.

9. The final test of the recording wire is made in the laboratory —covering all points of specification. This final test includes actual recording, playing, and erasing of the wire on all types of wire recorders and recording heads.

The processing of the stainless steel recording wire, covering fourteen (14) separate, closely controlled operations — in addition to the pilot plant laboratory preliminaries and six (6) tests —requires at least three weeks, from the time the original raw steel rod is put in process to the time the finished product is approved for shipment from the wire mill.

* * *

THE foregoing is related to the production of the standard .0036" stainless steel recording wire, made to the specifications agreed upon between the Armour Research Foundation, Armour Licensees and the National-Standard Company. The wire mill is manufacturing the recording wire which the industry **regards as the useful recording medium.** It is the accepted standard.

* * *

USE of standard stainless steel recording contemplates giving users of wire recorders the same advantage phonograph users enjoy —that of playing the same recorded program on his own, his friends' or anyone else's playback instrument. A phonograph record plays on any phonograph. Recorded wire should be playable on any wire recorder.

* * *

THE following summary will show the performance quality of the recording medium attained by the carefully controlled production methods.

MAGNETICS

Hc—225 to 325 oersteds
Br—1500 to 3500 gauss

Buy MONTGOMERY Tinsel Wires

TINSEL CONDUCTORS • RESISTANCE TINSEL
TINSEL LAME • • • TINSEL THREADS

Bare electrical conductors and resistance elements wound on reels ready for insulating with plastic, rubber, etc. Available for prompt deliveries.

Lame and thread furnished in large packages for economical and efficient production on high-speed looms.

Send for samples and engineering data.

THE MONTGOMERY COMPANY
25 Canal St., Windsor Locks, Conn. Tel.: Windsor Locks 14

WIRE FOR WEAR
CONTINENTAL STEEL CORP. STEEL CONTINENTAL WIRE KOKOMO, IND.
● IMPROVED THROUGH RESEARCH
● PROVED IN HARDEST USE
Constant improvement through research and constant proof in toughest use have established Continental as the "wire for wear." Whether the need is for wire to stand up under difficult forming operations . . . or for a special shaped wire to provide smarter-looking, longer-lasting trim . . . Continental is the wire that wins friends and holds customers. Write us at Kokomo.
CONTINENTAL STEEL
CONTINENTAL STEEL CORPORATION

Reprints Available of

"An Investigation of the Weavability of Wire with Observations on the Defects of Wire and Wire Cloth."

This important treatise on weaving wire and wire weaving should be in the library of every wire weaving concern and manufacturer of weaving wire in the country.

The article was prepared under the sponsorship of the Ludlow-Saylor Wire Company by Walston Chubb, Jr. and Dr. E. S. Epplesheimer at the Missouri School of Mines and Metallurgy.

The original was published in four installments in Wire and Wire Products. 28 pages, illustrated.

PRICE: $4.40 PER COPY

Available as long as the supply lasts.

WIRE AND WIRE PRODUCTS
300 MAIN STREET • STAMFORD, CONN.

WE BUY WE SELL

We Pay Highest Prices for Used Machinery

TAKE-UP STANDS

FROM 30" TO 96"

ALL TYPES

All Machines Reconditioned in Our Own Shop

WIRE & TEXTILE MACHINERY INC.

P. O. BOX 436, PAWTUCKET, R. I.

MODERN

SPOOLERS and COILERS

May improve your efficiency in a long forgotten department. We have developed new designs that may reduce your labor costs considerably. Tell us your spooling problem and we will gladly help you benefit from our experience with no obligation on your part.

BOYD SPOOLERS

Boyd & Sons Mfg. Corp.

1434-38 Callowhill St. Philadelphia 30, Pa.

REELS SPOOLS

ALL SIZES

WOOD- PLYWOOD -WOOD-METAL

RETURNABLE NON-RETURNABLE

Samples and Prices on Request

DURKEE MFG. CO. PINE RIVER, MINN.

AMERICAN PRESSED-METAL

SPOOLS

Standard Sizes 1¾" to 12" Head Diameters

"American" steel spools give extra strength and rigidity. Light weight saves production and shipping costs. Tough finishes include baked, enameled, plated or painted spools. Let us quote you on special designs for any purpose.

MADE TO LAST!

REELS

Standard Sizes 12" to 72" Head Diameters

For braiding, stranding, drawing, annealing, vulcanizing and shipping, "American" pressed-steel reels assure long life and cost savings. Let us quote you on standard reels or reels made to your particular specifications.

The American Pulley Company

PRESSED-METAL & SPECIALTY DIVISION • 4250 Wissahickon Avenue • Philadelphia 29, Pa.

PHYSICALS

Diameter—.0036" ± .0001" (10% to + .00015")
Out of round—.0001" Maximum
Tensile—2.5# minimum

PERFORMANCE

Dynamic Range

Saturated Signal to A. C. Noise range 50-55 Db.
Saturated Signal to D. C. Noise range 40-45 Db.
Useful Signal (less than 3% Distortion) to A. C. Noise Range 45-50 Db.
Transfer Range from useful signal 40-45 Db.

UNIFORMITY

Overall sensitivity variation spool to spool and uniformity over full length of one spool—2 Db (15% to 3 Db.)
Maximum short time variation 1 Db (10% to 1.5 Db).

★ ★ ★

MAGNETIC recording has an enormous potential as one of our greater industries. It has found application in home entertainment, commercial recording, dictation work and many special uses. Continued growth and popularity will depend in a large manner on the quality of performance from the recording medium and the recording and playback machines. This Company feels greatly the importance of the quality requirements and continues to produce the standard record medium of high quality that will conduce to its even greater usage.

★ ★ ★

Compounding Vinyl by the Special Speedmullor Process

(*Continued from page 733*)

cake. The process is started manually and progresses automatically until discharged.

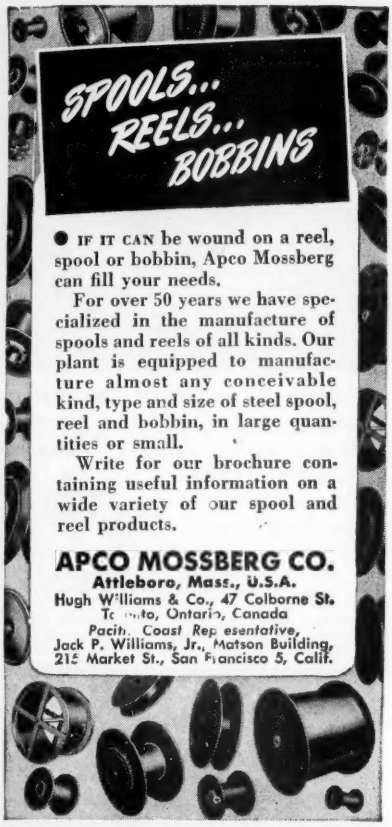
★ ★ ★

MANY advantages result in using this process. Since there are no large fused particles, less time is required to heat in the extrusion process, and the capacity of the extruder is usually increased approximately 20 per cent.

★ ★ ★

THE SPEEDMULLOR has a batch size of three cubic feet, which is a capacity of 150 to 200 pounds per batch. Ten batches per hour can be produced, making the hourly capacity 1,500 to 2,000 pounds.

★ ★ ★



● IF IT CAN be wound on a reel, spool or bobbin, Apco Mossberg can fill your needs.

For over 50 years we have specialized in the manufacture of spools and reels of all kinds. Our plant is equipped to manufacture almost any conceivable kind, type and size of steel spool, reel and bobbin, in large quantities or small.

Write for our brochure containing useful information on a wide variety of our spool and reel products.

APCO MOSSBERG CO.
Attleboro, Mass., U.S.A.
Hugh Williams & Co., 47 Colborne St.
Toronto, Ontario, Canada
Pacific Coast Representative,
Jack P. Williams, Jr., Matson Building,
215 Market St., San Francisco 5, Calif.

EISLER
RESISTANCE WELDERS
SPOT • BUTT •
GUN • SEAM

A complete line of Resistance Welders from ¼ to 300 KVA for all types of welding

•

GLASS FORMING MACHINES for Ampules, Bulbs, Radio Tubes and Electronic Tubes.

TRANSFORMERS
STANDARD • SPECIAL

Air, Oil, or Water Cooled
Made in sizes from ¼ to 500 KVA

FURNACE • DISTRIBUTION • POWER LIGHTING • PHASE CHANGING • WELDING • ELECTRONIC DEVICES, Etc.

SEND FOR NEW CATALOG NO. TR-50

CHAS. EISLER
EISLER ENGINEERING CO., Inc.
747 So. 13th St. Newark 3, N. J.

THIS equipment presents a solution to the problem of quality and price, not only for the large compounder, but the small extruder as well.

★ ★ ★

THE process saves approximately ten to fifteen cents per pound of powder processed, as compared to the usual price of Vinyl molding granules.

★ ★ ★

THE processing cost is less than ½¢ per pound! This cost includes power, heat, overhead, and depreciation. The cost of the processed Vinyl powder will depend upon the formulation required.

★ ★ ★

BECAUSE the process does not fuse the material by the application of heat, colors are more uniform and may be faithfully duplicated, batch after batch.

★ ★ ★

BECAUSE no plasticizer is lost in the compounding process the resulting product extruded from powder produced by this process has greater elasticity and longer life.

★ ★ ★

IN conclusion this process for compounding Vinyl resins produces a material having superior characteristics at a lower cost.

★ ★ ★

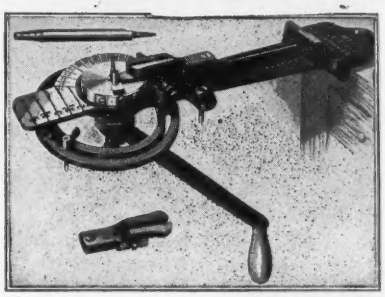
To . . . .

WIRE MILL MEN

Have you considered joining the Wire Association? You are cordially invited to become a member. Dues are $15.00 a year, which includes a subscription to WIRE & WIRE PRODUCTS and a copy of the Annual Buyers Guide.

THE WIRE ASSOCIATION
300 Main Street,
Stamford, Conn.

KILMER WIRE FORMER



Forms Eleven Sizes of Eyes from Flat, Round, Square or Half-Round Stock, also Almost Any Shape Desired

Adjustable for No. 3 to No. 21 Gage Wire

The cut on right shows a few of the thousands of the forms made on this WIRE FORMER

M. D. KILMER & COMPANY
4840 BROOKPARK RD.
CLEVELAND 9, OHIO

Simple as

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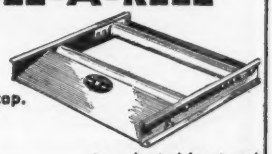

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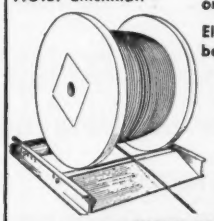

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Wire for Zippers

(*Continued from page 726*)

with the jewelry and watchmaking trades.

★ ★ ★

AT Talon, Inc., experience shows that the specifications previously referred to in the manufacture of fastener chain are also applicable to the metal and processes used in making sliders (the component part which is used to open and close the zipper). However, in the manufacture of sliders certain additional requirements must be met. In the main, there are three common processes for making this component. In the trade these generally are referred to as the coining, forming and die cast methods. At Talon, Inc., the coining method has been found most effective for making uniformly strong, smoothly operating sliders. This particular process utilizes round wire in gauges ranging from .100″ to .250″ diameter. The metal must have the same close chemical specifications and dimensional tolerances as the wire used in making zipper teeth. Larger grain size is permissible for coined slider metal but closer attention must be paid to the surface condition than for zipper chain.

★ ★ ★

THE surface condition is critical in that excessive surface tension can interfere seriously with the proper flow of metal and produce a contour unsuited to this use. Failure of the metal to flow properly produces a greatly increased load on equipment and leads to premature equipment wear and failure. Only through years and years of constant experimentation by both the wire products and zipper industries has an effective finish been developed, as well as methods for protecting the finish while the metal is in transit and in storage. This has been accomplished without resorting to an expensive treatment which would have increased not only the cost of application, but the preparation for processing as well.

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DURING fabrication an expensive annealing operation is required which in addition to its own cost produces a costly cleaning and waste disposal problem. Looking far ahead, it is hoped that basic research eventually will provide material which will be the means of eliminating the present expensive cost of heat treatment and its resultant disposal problem.

* * *

THE absolute necessity for homogeneity becomes even more critical in fabricating wire for sliders in that (lack of knowledge of) the presence of seams or inclusions would require expensive inspection of completed parts, or if such a condition were undetected it conceivably could be the cause of failure of the final product in actual use. This naturally leads to an elaborate material inspection control and a very exacting statistical quality control of the finished product. Such characteristics as color, surface condition, specifications and other details are as equally important in slider fabrication as they are in the production of the other zipper component parts.

* * *

DURING the past two or three years considerable progress has been made in obtaining slider metal in larger coils and it is to be hoped that future advances in the metal industry will provide the means of further improvement in this direction. Modern materials handling methods have made possible the effective use of larger coils, with a corresponding reduction in the cost of handling. It may be that the practical limits in this regard are almost wholly dependent upon future machine developments.

* * *

IT is felt that the zipper industry has kept pace with the metal fabricating industry in the development of new products designed to take advantage of the ever increasing number of different types of metal. Thus, development within the zipper industry keeps pace with development in the metal industry.

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CHARLES F. BLACKMER, former president of the American Steel & Wire Company, died on August 15th. He was 72.

★ ★ ★

HE began his career in wiremaking in 1898 with the Washburn and Moen Manufacturing Company, which was later acquired by the American Steel & Wire Company. During his career, Mr. Washburn was employed in American Steel & Wire Company plants at Waukegan, Ill., Duluth, Pittsburgh and Cleveland.

★ ★ ★

AT one time he was assistant foreman in the wire-drawing department at the former North Works in Worcester. He was president of the company from 1933 to 1938.

★ ★ ★

HE is survived by his widow, Mrs. Marie Wright Blackmer.

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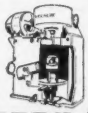

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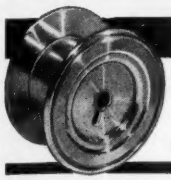

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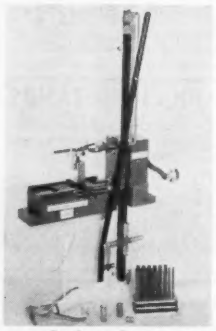

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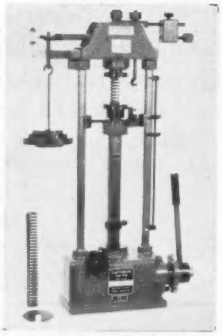

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Wilson, Lee, Engineering Co., Inc. 767
Wire & Textile Machinery, Inc. 764

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Youngstown Sheet & Tube Company, The 719

WHERE TO BUY

For more complete information, consult the annual Wire and Wire Products Directory, Index & Buyer's Guide.

ABRASIVES—
Norton Co., Worcester, Mass.

ACID INHIBITORS—
(See Inhibitors, Pickling)

ACID-PROOF CONSTRUCTION—
Chemsteel Construction Co., Pittsburgh, Pa.
Haveg Corporation, Newark, Del.

ANNEALING MACHINES—Open Flame
Syncro Machine Co., Perth Amboy, N. J.

ANNEALING POTS AND BOXES—
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.

ARMORING EQUIPMENT—
American Insulating Machy. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc, Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Machy., Inc., Pawtucket, R. I.

BAKERS—Rod and Wire
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Morgan Construction Co., Worcester, Mass.
Ross, J. O., Engr. Corp., New York, N. Y.

BAR STOCK—Stainless Steel
American Steel & Wire Company, Cleveland, Chicago, New York.
Columbia Steel Co., San Francisco, Calif.
U. S. Steel Export Company, New York, N. Y.

BOBBINS—Braider & Wire Weaving
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

BORAX—Wire Drawing
Pacific Coast Borax Corp., New York, N. Y.

BORON CARBIDE—
Norton Co., Worcester, Mass.

BRAKES—Pneumatic
Entwistle, Jas. L. Co., Pawtucket, R. I.

CABLE—Aluminum
Aluminum Co. of America, Pittsburgh, Pa.

CABLE LACQUERING OVENS—
Industrial Ovens, Inc., Cleveland, O.

CARRIERS—Braider, High Speed
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

CASTINGS—Wire Mill
Scudder, E. J., Fdry. & Mach. Co., Trenton, N.J.

CEMENTS—Refractory
Norton Co., Worcester, Mass.

CHEMICALS—Cleaning
(See Cleaners—Metal)

CLEANERS—Metal
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Phila., Pa.
Houghton, E. F., & Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Metal & Thermit Corp., New York, N. Y.
Oakite Products, Inc., New York, N. Y.
The Parkin Chemical Company, Pittsburgh, Pa.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

CLEANING & PICKLING EQUIP.—
Chemsteel Construction Co., Pittsburgh, Pa.
Cleveland Tramrail Div., of the Cleveland Crane & Engineering Co., Wickliffe, O.
Haveg Corp., Newark, Del.
Holden, A. F., Company, The, New Haven, Conn. and Detroit, Mich.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

CLOTH—WIRE, All Metals
Roebling's, John A. Sons, Co., Trenton, N. J.
Wickwire Bros., Cortland, N. Y.

COATING COMPOUNDS—
Apex Alkali Products Co., Philadelphia, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

COILERS—Sheet, Strip and Wire
Entwistle, Jas. L. Co., Pawtucket, R. I.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J. Machine Co., Newark, N. J.
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Corp., Cleveland, Ohio.

COLD HEADERS—
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

COMPOUNDS—Coppering
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Diamond
Eastern Carbide Corp., New Rochelle, N. Y.
Hyprez Division, Engis Equipment Co., Chicago, Ill.
Magnus Chemical Co., Garwood, N. J.

COMPOUNDS—For Improving Drawing and Extrusion
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Metal Finishing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Metal & Thermit Corp., New York, N. Y.

COMPOUNDS—Phosphate Coating
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Rust Preventing
American Chemical Paint Co., Ambler, Pa.
American Lanolin Corp., Lawrence, Mass.
Apex Alkali Products Co., Philadelphia, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Oakite Products, Inc., New York, N. Y.

COMPOUNDS—Rust Removing
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

COMPOUNDS—Wire Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Bick, Hans C., Inc., Reading, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H. Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Pacific Coast Borax Corp., New York, N. Y.
Potter, Neil C., Newark, N. J.
Standard Industrial Compounds Co., Inc., Chicago, Ill.
Swift & Company, Chicago, Ill.

CONDUCTORS—Flexible, Electrical
Montgomery Co., The, Windsor Locks, Conn.

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

CORDS—Electrical, Tinsel Conductor
Montgomery Co., The, Windsor Locks, Conn.

CORROSION PREVENTIVES—
Angier Corporation, The, Framingham, Mass.

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUTTING TOOLS—Carbide
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Metal Carbides Corporation, Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, New York.
Vascoloy-Ramet Corp., North Chicago, Ill.

CUTTING TOOLS—Wire
Porter, H. K., Inc., Everett, Mass.

DIAMONDS—Industrial
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Diamond Distributors, Inc., New York, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDERS—
Danforth, C. W., Co., Youngstown, Ohio.
Diamond Distributors, Inc., New York, N. Y.
Eastern Carbide Corp., New Rochelle, N. Y.
Hyprez Division, Engis Equipment Co., Chicago, Ill.
Indiana Wire Die Co., Ft. Wayne, Ind.
New England Wire Die Co., Worcester, Mass.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND TOOLS—
Carboloy Co., Inc., Detroit, Mich.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Carbide
(See Dies—Tungsten Carbide)

DIES—Cold Heading
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio.
Vascoloy-Ramet Corp., No. Chicago, Ill.

DIES—Diamond
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., New York, N. Y.
Cochaud Wire Die Corp., New York, N. Y.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
New England Wire Die Co., Worcester, Mass.
North American Philips Co. Inc., New York, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Extrusion
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp. New Rochelle, N. Y.
Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
Hartley Tool & Die Co., Thomaston, Conn.
Metal Carbides Corporation, Youngstown, Ohio.
Murex, Ltd., Rainham, England
Robertson, John, Co., Brooklyn, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIES—Eyelet
Eastern Carbide Corp. New Rochelle, N. Y.
Hartley Tool & Die Co., Thomaston, Conn.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.

DIES—Pointing
Sjogren Tool and Machine Co., Auburn, Mass.

DIES—Repairs & Re-Cutting
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., New York, N. Y.
Carboloy Co., Detroit, Mich.
Cochaud Wire Die Corp., New York, N. Y.
Eastern Carbide Corp. New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Hartley Tool & Die Co., Thomaston, Conn.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corporation, Youngstown, Ohio.
New England Wire Die Co., Worcester, Mass.
North American Philips Co., Inc., New York, N. Y
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Wayne Wire Die Co., Hillside, N. J.

DIES—Special Shapes, Etc.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Hartley Tool & Die Co., Thomaston, Conn.
Indiana Wire Die Co., Ft. Wayne, Ind.
Murex, Ltd., Rainham, England
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.

DIES—Swaging
Murex, Ltd., Rainham, England
Sjogren Tool & Machine Co., Inc., Auburn, Mass.

DIES—Tantalum Carbide
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp. New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corporation, Youngstown, Ohio.

WHERE TO BUY, Continued

Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.

DIES—Tube Drawing
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Hartley Tool & Die Co., Thomaston, Conn.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Murex, Ltd., Rainham, England
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.

DIES—Tungsten Carbide
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Carboloy Co., Inc., Detroit, Mich.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Hartley Tool & Die. Co., Thomaston, Conn.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Murex, Ltd., Rainham, England
Rusch Wire Die Corp., Croton-on-the-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Wayne Wire Die Co., Hillside, N. J.

DRAW BENCHES—
(See MACHINERY—Draw Benches)

DRUMS—Flange Steel
Hubbard Spool Company, Chicago, Ill.

DRUMS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.
Watson Machine Co., The, Paterson, N. J.

DRYING EQUIPMENT—
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Industrial Ovens, Inc., Cleveland, Ohio.
National Rubber Machinery Co., Akron, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Ross, J. O., Engineering Corp., New York, N. Y.

ENGINEERS—Consulting
Metal Fatigue—Fatigue of Materials Laboratory, Princeton, N. J.
Spring Design—Carlson Co., The, New York, N. Y.
Wire Mill—Lewis, Kenneth B., Worcester, Mass.

EQUIPMENT—Insulation Testing
Davis, R. L., Elec. Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FENCING & FENCES—Wire
Interlocking Fence Co., Morton, Ill.

FLUXES—Soldering
American Chemical Paint Co., Ambler, Pa.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Parkin Chemical Company, The, Pittsburgh, Pa.

FRICTION PAY-OFF STANDS—
Industrial Ovens, Inc., Cleveland, Ohio.

FURNACES—Annealing
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn. and Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engr. Co., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Automatic
Electric Furnace Co., Salem, Ohio.
Surface Combustion Corp., Toledo, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Brazing
Electric Furnace Co., Salem, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.

FURNACES—Bright Annealing
Electric Furnace Co., Salem, Ohio.
Michigan Oven Co., Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Electric
Electric Furnace Co., Salem, Ohio.
Rockwell, W. S., Co., Fairfield, Conn.
Trauwood Engineering Co., The, Cleveland, Ohio.

FURNACES—Galvanizing Equipment
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.
Rockwell, W. S. Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., The, Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

FURNACES—Hard'ing & Temp'ing
Ajax Electric Co., Inc., Philadelphia, Pa.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., The, Cleveland, Ohio

FURNACES—Lead Melting
Electric Furnace Co., Salem, Ohio.
Robertson, John, Co., Brooklyn, N. Y.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Non-Oxidizing
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Normalizing
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Pot (oil, gas, electric)
Ajax Electric Co., Inc., Philadelphia, Pa.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.

FURNACES—Resistance Heating, Strand
Trauwood Engineering Co., The, Cleveland, Ohio.

FURNACES—Salt Bath
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio.
Holden, A. F., Co., The, New Haven, Conn, and Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Wire, Strip & Sheet
Carl-Mayer Corp., The, Cleveland, Ohio.
Eisler Engineering Co., Newark, N. J.
Electric Furnace Co., Salem, Ohio.
Michigan Oven Co., Detroit, Mich.
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., The, Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

GALVANIZING EQUIPMENT—
Steel Equipment Co., Cleveland, Ohio.
Wean Equipment Corp., Cleveland, Ohio.

GRINDERS—Roll
Norton Co., The, Worcester, Mass.

HAMMERS—Swaging
Sjogren Tool and Machine Co., Auburn, Mass.

HOOKS—Pickling & Liming
Bronze Die Casting Co., Pittsburgh, Pa.
Lewis Welding & Eng'g Corp., Bedford, Ohio.
Youngstown Welding & Engineering Co., Youngstown, Ohio.

HOISTS—Electric Travelling
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

INHIBITORS—Pickling
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Oakite Products, Inc., New York, N. Y.
Parkin Chemical Company, The, Pittsburgh, Pa.

INSULATING LACQUERING SYSTEMS—Continuous
American Insulating Machine Co., Phila., Pa.
Industrial Ovens, Inc., Cleveland, Ohio.

INSULATING MATERIALS—
Belding, Heminway, Corticelli Co., New York, N. Y.
Glass Fibers, Inc., Waterville, Ohio.
Merrimac Paper Co., New York, N. Y.
New England Lacquer Co., E. Providence, R. I.
Owens Corning Fiberglas Corp., Toledo, O.
Standard Varnish Works, Staten Island, N. Y.
Twitchell, E. W., Philadelphia, Pa.

INSULATING MATERIALS—Paper — For Electric Wire Cable.
Merrimac Paper Co., New York, N. Y.
Twitchell, E. W., Philadelphia, Pa.

LACQUERS—For Electric Wire
New England Lacquer Co., E. Providence, R. I.
Standard Varnish Works, Staten Island, N. Y.

LAME—LAHN—
Montgomery Co., The, Windsor Locks, Conn.

LATHES—Die Reaming
Carboloy Co., Inc., Detroit, Mich.
Roos, Tool & Mfg. Co., Montclair, N. J.

LIME—
Warner Co., Philadelphia and Bellefonte, Pa.

LININGS—Acid and Alkali Proof
Haveg Corp., Newark, Del.

LUBRICANTS — For Metal Cutting, Stamping and Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Houghton, E. F. & Co., Philadelphia, Pa.
Magnus Chemical Co., Garwood, N. J.
Miller, R. H., Co., Inc., Homer, N. Y.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Inc., Chicago, Ill.

LUBRICANTS—Wire Drawing
(See Compounds—Wire Drawing)

LUBRICANTS—Wire Rope
Swift & Co., Chicago, Ill.

LUMBER—Wire Mill, for lagging and car blocking
North Anson Reel Co., North Anson, Maine.

MACHINERY—Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Barbed Wire
Glader Machine Works, Chicago, Ill.
Wean Engineering Co., Cleveland, Ohio.

MACHINERY—Bead Wrapping
Terkelsen Machine Co., Boston, Mass.

MACHINERY—Braiding
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Wardwell Braiding Machine Co., Central Falls, R. I.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

MACHINERY—Brazing
Eisler Engineering Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Bunching
American Insulating Mach'y Co., Phila., Pa.
Haskell-Dawes Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
Haskell-Dawes Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Chain Making
Nilson, A. H. Machine Co., The, Bridgeport, Conn.

WHERE TO BUY, Continued

MACHINERY—Cable, Rope Closing
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coilers
Boyd & Sons Manufacturing Co., Phila., Pa.
Eisler Engineering Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (used), New York, N. Y.
New England Butt Co., Providence, R. I.
Ruesch, H. J. Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.
Wire & Textile Machinery, Inc., Pawtucket, R. I.

MACHINERY—Cold Heading
(See Cold Headers)

MACHINERY—Copper Wire Drawing and Rolling
Aetna-Standard Engineering Co., Youngstown, Ohio.
American Insulating Mach'y Co., Phila., Pa.
National Mach'y Exch. (Used), New York, N. Y.
Ruesch, H. J. Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire
American Insulating Mach'y Co., Phila., Pa.
National Rubber Machinery Co., Akron, Ohio.
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Standard Machinery Co., Mystic, Conn.
Syncro Machine Co., Perth Amboy, N. J.
Wardwell Braiding Machine Co., Central Falls, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cutting
Eisler Engineering Co., Newark, N. J.
Lewis Machine Co., The, Cleveland, Ohio.
Mettler Machine Tool, Inc., New Haven, Conn.
National Mach'y Exch. (Used) New York, N. Y.
Nilson Machine Co., A. H., Bridgeport, Conn.
Porter, H. K., Inc., Everett, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Die Making
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel & Carbide Corp., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Red Star Engineering, Inc., Rahway, N. J.
Roos, Tool & Mfg. Co., Montclair, N. J.
Wayne Wire Die Co., Hillside, N. J.

MACHINERY—Draw Benches
Aetna-Standard Engineering Co., Youngstown, Ohio.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Edging
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Industrial Ovens, Inc., Cleveland, Ohio.
Michigan Oven Co., Detroit, Mich.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Extruding
National Rubber Machinery Co., Akron, Ohio.
Robertson, John, Co., Brooklyn, N. Y.
Royle, John, & Sons, Paterson, N. J.
Standard Machinery Co., Mystic, Conn.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Fence
Glader, Wm., Machine Works, Chicago, Ill.
Interlocking Fence Co., Morton, Ill.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Filament Coil Winding
Eisler Engineering Co., Newark, N. J.

MACHINERY—Flat Wire
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Galvanizing
(See Galvanizing Equipment)

MACHINERY—Galvanizing Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.
Wilson, Lee, Engr. Co., Cleveland, Ohio.

MACHINERY—Gang Winders
Entwistle, Jas. L. Co., Pawtucket, R. I.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., The, Worcester, Mass.

MACHINERY—Insulating
American Insulating Mach'y Co., Phila., Pa.
National Rubber Machinery Co., Akron, Ohio.
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lead Encasing Presses, etc.
Robertson, John Co., Brooklyn, N. Y.

MACHINERY—Lead Stripping
Robertson, John Co., Brooklyn, N. Y.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Looms, Wire Weaving
Interlocking Fence Co., Morton, Ill.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Material Handling
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MACHINERY—Measuring Wire & Cable
Durant Mfg. Co., Milwaukee, Wis.
Entwistle, Jas. L. Co., Pawtucket, R. I.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Glader, Wm., Machine Works, Chicago, Ill.
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Panning
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Perth Amboy, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Pickling
Chemsteel Construction Co., Pittsburgh, Pa.
Youngstown Welding & Engineering Co., Youngstown, Ohio.

MACHINERY—Pointing
Aetna-Standard Engineering Co., Youngstown, Ohio.
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Poultry Wire Fencing
Interlocking Fence Co., Morton, Ill.

MACHINERY—Rod Mill
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Rolling Mill
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Rubber Insulating
National Rubber Machinery Co., Akron, Ohio.
Royle, John & Sons, Paterson, N. J.
Standard Machinery Co., Mystic, Conn.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Rubber Tubing and Straining
National Rubber Machinery Co., Akron, Ohio.
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Mystic, Conn.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Screw Wire
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Special
American Insulating Mach'y Co., Phila., Pa.
Davis, R. L. Electric Co., Wallingford, Conn.
Emory, Robert J., Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
New England Butt Co., Providence, R. I.
Red Star Engineering, Inc., Rahway, N. J.
Ruesch, H. J. Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Mystic, Conn.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Spooling
American Insulating Mach'y Co., Phila., Pa.
Boyd & Sons Manufacturing Co., Phila., Pa.
Davis, R. L. Electric Co., Wallingford, Conn.
Eisler Engineering Co., Newark, N. J.
Emory, Robert J., Co., Newark, N. J.
Entwistle, Jas. L. Co., Pawtucket, R. I.
National Mach'y Exch. (Used), New York, N.Y.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

MACHINERY—Spring Making
National Mach'y Exch. (Used), New York, N.Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Straightening
Lewis Machine Co., The, Cleveland, Ohio.
Mettler Machine Tool Co., New Haven, Conn.
National Mach'y Exch. (Used), New York, N.Y.
Nilson, A. H. Machine Co., Bridgeport, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Wean Equipment Corp., Cleveland, Ohio.
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Stranding
Haskell-Dawes Machine Co., Philadelphia, Pa.
Hughesville Machine & Tool Co., Hughesville, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Aetna-Standard Engineering Co., Youngstown, Ohio.
Ruesch, H. J., Machine Co., Newark, N. J.
Steel Equipment Co., Cleveland, Ohio.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Swaging
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

WHERE TO BUY, Continued

MACHINERY—Testing Physical
Scott Testers, Inc., Providence, R. I.

MACHINERY—Testing Equipment—Sparkers
Davis, R. L. Elec. Co., Wallingford, Conn.
Entwistle, Jas. L., Pawtucket, R. I.
Wire & Textile Machinery, Inc., Pawtucket, R.I.

MACHINERY—Tinning Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Steel Equipment Co., Cleveland, Ohio.
Syncro Machine Co., Perth Amboy, N. J.
Wean Equipment Co., Cleveland, Ohio.

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill
Marshall-Richards Machine Company, Ltd., Trenton, N. J.

MACHINERY—Twinning
(See Mach.—Bunching)

MACHINERY—Welding Wire
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago, Ill.
Syncro Machine Co., Perth Amboy, N. J.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
Davis, R. L. Electric Co., Wallingford, Conn.
Eisler Engineering Co., Newark, N. J.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wind-up (Constant Tension, Variable Speed)
Aetna-Standard Engineering Co., Youngstown, Ohio.
Davis, R. L. Electric Co., Wallingford, Conn.
Industrial Ovens, Inc., Cleveland, Ohio.
Marshall-Richards Machine Company, Ltd., Trenton, N. J.
National Rubber Mach'y Co., Akron, Ohio.
Standard Machinery Co., Mystic, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Bending
Eisler Engineering Co., Newark, N. J.
Kilmer, M. D., & Co., Cleveland, Ohio.

MACHINERY—Wire Drawing
Aetna-Standard Engineering Co., Youngstown, Ohio.
American Insulating Mach'y Co., Phila., Pa.
Marshall-Richards Machine Company, Ltd., Trenton, N. J.
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N.Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Fdry & Mach. Co., Trenton, N.J.
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio.
Svenska Telegrambyran (Morgardshammer) Stockholm, Sweden
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio.

MACHINERY—Wire Forming
Kilmer, M. D. & Co., Cleveland, Ohio.
National Mach'y Exch. (Used), New York, N.Y.
Nilson Machine Co., A. H., Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wood Screw
National Mach'y Exch. (Used), New York, N.Y.

MACHINERY—Wrapping Straight Lengths and Tubing
Angier Corporation, The, Framingham, Mass.
Terkelsen Machine Co., Boston, Mass.

MACHINERY—Wrapping Wire Coils
Angier Corporation, The, Framingham, Mass.
Terkelsen Machine Co., Boston, Mass.

MATERIAL HANDLING EQUIPMENT
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MILLS—Tandem, Rolling & Edging
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Co., Cleveland, Ohio.

NAILS—Wire
American Steel & Wire Co., Cleveland, Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling, John A. Sons Co., Trenton, N. J.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.

OVENS—Cable Lacquering
American Insulating Mach'y Co., Phila., Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Industrial Ovens, Inc., Cleveland, Ohio.
Michigan Oven Co., Detroit, Mich.

OVENS—Dehydrogenizing
Industrial Ovens, Inc., Cleveland, Ohio.

OVENS—Industrial
Drying Systems, Inc., Chicago, Ill.
Industrial Ovens, Inc., Cleveland, Ohio.
Michigan Oven Co., Detroit, Mich.
Ross, J. O., Engr. Corp., New York, N. Y.

OVENS—Rod Bakers
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Michigan Oven Co., Detroit, Mich.
Rockwell, W. S. Co., Fairfield, Conn.
Ross, J. O. Eng'g Corp., N. Y., N. Y.

OVENS—Welding Rod Coating
Carl-Mayer Corp., The, Cleveland, Ohio.
Drying Systems, Inc., Chicago, Ill.
Industrial Ovens, Inc., Cleveland, Ohio.
Ross, J. O., Engr. Corp., New York, N. Y.

PAINT BONDING CHEMICALS—
American Chemical Paint Co., Ambler, Pa.

PAINTS—Heat Resisting
American Chemical Paint Co., Ambler, Pa.

PANS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

PAPER—Creped Wrapping
Angier Corporation, The, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.
Terkelsen Machine Co., Boston, Mass.

PAPER—For Coil Wrapping and Corrosion Prevention
Angier Corporation, The, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.
Terkelsen Machine Co., Boston, Mass.

PATENT ATTORNEYS—
Lancaster, Allwine & Rommel, Washington, D.C.

PHOSPHATE COATING CHEMICALS
American Chemical Paint Co., Ambler, Pa.
Oakite Products, Inc., New York, N. Y.

PICKLING COMPOUNDS—
See (Inhibitors—Pickling)

PICKLING—Hooks, etc. Acid Resisting
Bronze Die Casting Co., Pittsburgh, Pa.
Lewis Welding & Eng'g Corp., Bedford, Ohio.
Youngstown Welding & Engineering Co., Youngstown, Ohio.

PICKLING TANK LININGS—
Chemsteel Construction Co., Pittsburgh, Pa.
Haveg Corp., Newark, Del.

PLASTIC TESTERS—
Scott Testers, Inc., Providence, R. I.

PNEUMATIC CYLINDERS—
Entwistle, James L. Co., Pawtucket, R. I.

POTS—Lacquer
Industrial Ovens, Inc., Cleveland, Ohio.

POTS—Lead Melting
Robertson, John, Co., Brooklyn, N. Y.

PRESSES—Hydraulic and Mechanical
Robertson, John, Co., Brooklyn, N. Y.
Standard Machinery Co., Mystic, Conn.

PRESSES—Lead
Robertson, John, Co., Brooklyn, N. Y.

PULLERS AND GRIPS—For Wire
Morgan Construction Co., Worcester, Mass.
Scudder, E. J. Fdry & Mach. Co., Trenton, N.J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio.

PUMPS—Hydraulic
Robertson, John, Co., Brooklyn, N. Y.

REEL AND TENSION STANDS—
Davis, R. L. Electric Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.
Industrial Ovens, Inc., Cleveland, Ohio.
Roll-a-Reel, Cincinnati, Ohio.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

REEL CRUTCHES—
Roll-a-Reel, Cincinnati, Ohio
Watson Machine Co., Paterson, N. J.

REELS & SPOOLS—Drawn Aluminum Alloy
Acrometal Products, Inc., Minneapolis, Minn.
Hubbard Spool Co., Chicago, Ill.

REELS & SPOOLS—Annealing and Stranding
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp. Niles, Ohio.

REELS & SPOOLS—Collapsible
Entwistle, Jas. L. Co., Pawtucket, R. I.

REELS & SPOOLS—Plastic
Hubbard Spool Co., Chicago, Ill.

REELS & SPOOLS—Steel
American Pulley Company, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mason Can Company, Providence, R. I.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS AND SPOOLS—Shipping and Shop
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg. Co., The, Hazardville, Conn.
Clark, J. L., Mfg., Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mason Can Company, Providence, R. I.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine.

REELS & SPOOLS—Wooden
Acrometal Products, Inc., Minneapolis, Minn.
American Woodworking Co., Chicago, Ill.
Bridge Mfg. Co., Inc., The, Hazardville, Conn.
Durkee Mfg. Co., Pine River, Minn.
Nelson Co., The, Baltimore, Md.
North Anson Reel Co., North Anson, Maine.

REELS—Metal Bound
Durkee Mfg. Co., Pine River, Minn.
Hubbard Spool Co., Chicago, Ill.
North Anson Reel Co., North Anson, Maine.

REELS—Takeoff
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg. Co., The, Hazardville, Conn.
Clark, J. L. Mfg. Co., Rockford, Ill.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine.

REELS—Vulcanizing & Impregnating
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS—Wire Drawing
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company, Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

REELS—Wire Mill
Acrometal Products, Inc., Minneapolis, Minn.
American Pulley Company, Philadelphia, Pa.

WHERE TO BUY, Continued

Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg., Co., The, Hazardville, Conn.
Durkee Mfg. Co., Pine River, Minn.
Hubbard Spool Company, Chicago, Ill.
Mason Can Company, Providence, R. I.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
North Anson Reel Co., North Anson, Maine.

REFRACTORIES—High Temperature
Norton Company, Worcester, Mass.

RESISTANCE HEATING—Annealing Patenting, Etc.
Trauwood Engr. Co., Cleveland, Ohio.

ROD BAKERS—
(See Ovens—Rod Bakers)

RODS—Aluminum
Aluminum Co. of America, Pittsburgh, Pa.
Kaiser Aluminum & Chemical Sales, Inc., Oakland, California.

RODS—Nickel Alloy
International Nickel Co., Inc., New York, N.Y.

RODS—Stainless Steel
American Steel & Wire Co., Cleveland, Ohio.

RODS—Wire—Non-Ferrous
Platt Bros. & Co., The, Waterbury, Conn.

RODS—Wire, Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Indiana.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's John A., Sons Co., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

ROPE—Wire
American Steel & Wire Company, Cleveland, Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Roebling's John A., Sons Co., Trenton, N. J.
U. S. Steel Export Co., New York, N. Y.

RUBBER AND RUBBER COMPRESSION TESTERS—
Scott Testers, Inc., Providence, R. I.

RUST PROOF COMPOUNDS—
(See Compounds—Rust Preventing)

RUST REMOVING COMPOUNDS—
(See Compounds—Rust Preventing)

SALTS—Heat Treating, Descaling, etc.
Holden, A. F., Company, The, New Haven, Conn. and Detroit, Mich.
Houghton, E. F. & Co., Philadelphia, Pa.

SATURATION SYSTEMS—
Industrial Ovens, Inc., Cleveland, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y Inc., Pawtucket, R. I.

SOAPS—Industrial and Wire Drawing
(See Compounds—Wire Drawing)

SOLVENT RESIN SYSTEMS—Experimental
Industrial Ovens, Inc., Cleveland, Ohio.

STAMPINGS—Steel
Hubbard Spool Company, Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Roebling's, John A., Sons Co., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

SWIFTS—Take-off
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Watson Machine Co., Paterson, N. J.

TANKS—Compound
Haveg Corp., Newark, Del.
Watson Machine Co., Paterson, N. J.

TANKS—Pickling
Chemsteel Construction Co., Pittsburgh, Pa.
Haveg Corp., Newark, Del.

TANKS—Steel
Chemsteel Construction Co., Pittsburgh, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.

TINSEL—Cords, Decorative
(See: Tinsel—Electric Conductor)

TINSEL—Electric Conductor
Montgomery Co., The, Windsor Locks, Conn.

TINSEL—Electric Resistance
(See: Tinsel—Electric Conductor)

TINSEL—Lame, Silver and False Gold
(See: Tinsel—Electric Conductor)

TINSEL—Thread, Silver and False Gold
(See: Tinsel—Electric Conductor)

TINSEL—Thread, Decorative
(See: Tinsel—Electric Conductor)

TINSEL—Wire
(See: Tinsel—Electric Conductor)

TOOLS—Wire Cutting
Porter, H. K., Inc., Everett, Mass.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.

TRAVERSES—For Reels
Entwistle, James L. Co., Pawtucket, R. I.
Hubbard Spool Company, Chicago, Ill.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.

TRAVERSE MECHANISMS—
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Niles Steel Products Div., Republic Steel Corp., Niles, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y Inc., Pawtucket, R. I.

TUBE BENDERS AND FORMERS—
H. D. Kilmer Co., Cleveland, Ohio.
Ruesch, H. J., Machine Co., Newark, N. J.

VALVES & FITTINGS—Acid Resistant
Haveg Corp., Newark, Del.

VARNISHES—For Insulation
Standard Varnish Works, Staten Island, N. Y.

VULCANIZERS—
Watson Machine Co., Paterson, N. J.

VULCANIZING PANS—
American Insulating Mach'y Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.

WELDERS—Spot and Butt
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago, Ill.

WIND-UP AND UNWIND SYSTEMS—Continuous
American Insulating Mach'y Co., Phila., Pa.
Davis R. L. Electric Co., Wallingford, Conn.
Entwistle, James L., Co., Pawtucket, R. I.
Industrial Ovens, Inc., Cleveland, Ohio.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc., Pawtucket, R. I.

WIRE—Aluminum
Aluminum Co. of America, Pittsburgh, Pa.
Elmet Division, North American Philips Company, Inc., Lewistown, Maine.
Kaiser Aluminum & Chemical Sales, Inc., Oakland, California.
Malin & Co., Cleveland, Ohio.

WIRE—Barbed
Interlocking Fence Co., Morton, Ill.

WIRE—Cast
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Cold Heading
American Steel & Wire Co., Cleveland-Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.
Timmerbiel, E., Greenwich, Conn.
U. S. Steel Export Co., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Electric
Malin & Co., Cleveland, Ohio.

WIRE—Flat, Fine
Elmet Division, North American Philips Company, Inc., Lewistown, Maine.
Montgomery Co., The, Windsor Locks, Conn.

WIRE—Manufacturers
American Steel & Wire Co., Cleveland-Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Timmerbiel, E., Greenwich, Conn.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Music
American Steel & Wire Co., Cleveland-Chicago, New York.
Columbia Steel Co., San Francisco, Calif.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Malin & Co., Cleveland, Ohio.
Timmerbiel, E., Greenwich, Conn.
U. S. Steel Export Co., New York, N. Y.

WIRE—Nickel & Nickel Alloy
International Nickel Co., Inc., New York, N. Y.

WIRE—Nickel Silver and Phosphor Bronze
Malin & Co., Cleveland, Ohio.

WIRE—Spring
American Steel & Wire Co., Cleveland-Chicago, New York.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co., San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
Timmerbiel, E., Greenwich, Conn.
U. S. Steel Export Co., New York, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Stainless Steel
American Steel & Wire Co., Cleveland-Chicago, New York.
Columbia Steel Co., San Francisco, Calif.
Firth Sterling Steel & Carbide Co., McKeesport, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
U. S. Steel Export Co., New York, N. Y.

WIRE—Steel—Also Coppered Steel—Also Galvanized Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
Timmerbiel, E., Greenwich, Conn.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Straightening and Cutting
Pittsburgh Cut Wire Co., Pittsburgh, Pa.
Wickwire Brothers, Inc., Cortland, N. Y.

WIRE—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

WIRE CLOTH—Industrial
Roebling's, John A., Sons Co., Trenton, N. J.
Wickwire Brothers, Inc., Cortland, N. Y.

WRAPPING PAPER—Creped
Angier Corporation, The, Framingham, Mass.
Crepe-Kraft Company, The, Division National Waterproof Papers, Inc., Newark, N. J.

YARNS & TAPES—
Belding, Heminway, Corticelli Co., New York, N. Y.
Glass Fibers, Inc., Waterville, Ohio.
Owens Corning Fiberglas Corp., Toledo, Ohio.
Twitchell, E. W., Philadelphia, Pa.

YARN TESTERS—
Scott Testers, Inc., Providence, R. I.

The WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON 3, NEW JERSEY, U.S.A.

WATSON

ELECTRICAL WIRE AND CABLE, WIRE ROPE AND CORDAGE MACHINERY

NEW "SHAFTLESS" TAKEUPS-TYPE "H"

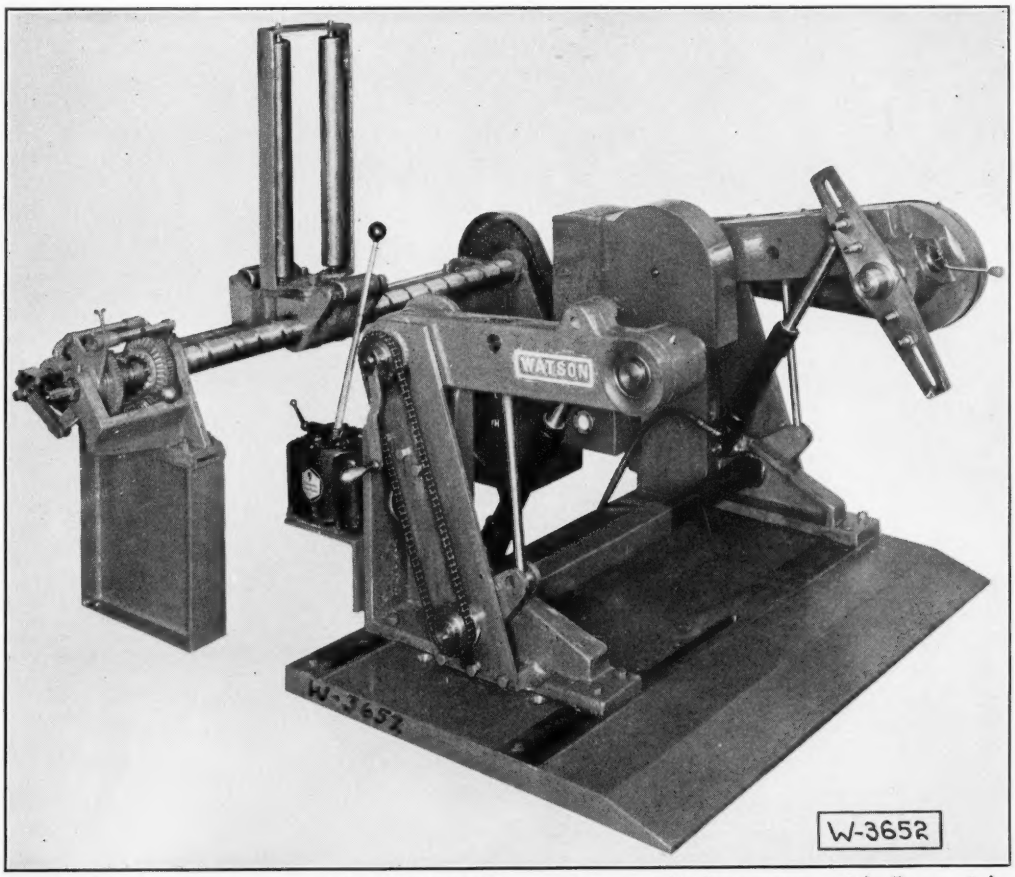
At a moderate price, these units offer many advantages over shaft types, among them:

SAFETY. No possibility of accidental injury due to reel shaft handling.

HYDRAULIC LIFT. Functions with greatest ease. Hand controlled, shockless lowering of fully loaded reels to floor.

DRIVE. Always in mesh. Permits reel winding at any height from floor. A few pump strokes suffice to clear reel from floor, ready for winding.

DESIGN. Heavy duty, fully ball bearing. Rapid adjustments for any reel within range. Reel entrance and exit in a minimum of time. Mounts our standard automatic traverses and transmissions.



Model illustrated above, our 50" HSD/40-RR, operates at high tensions with floor pickup of reels from 24" to 50" flange dia. Full 3-ton reels can be lowered and lifted. Width to user's specification. Multiple-disc-in-oil two speed transmission D/40 and automatic traverse RR provided here.—Other auxiliaries available.—Inquiries invited.

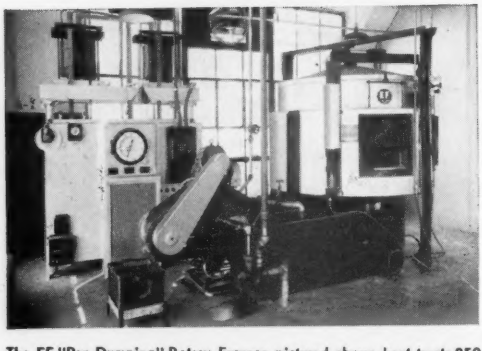
EF builds a size and type of furnace for every process, product or production

ROTARY Heat Treating and Billet Heating FURNACES for any production requirement

The large EF oil-fired rotary hearth furnace pictured above is 40 ft. in diameter—heats billets up to 10″ by 32″ uniformly and efficiently. It has capacity to handle 35,000 lbs. of billets per hour and is equipped with a push-button controlled, hydraulically operated charging and discharging mechanism.

Other EF rotary furnaces, with capacities ranging from 175 to 35,000 lbs. per hour, are used for scale-free heat treating, brazing, billet heating, heating for forging, rolling, extrusion and other ferrous and non-ferrous heat treating operations.

We build all types of batch and continuous furnaces. For maximum efficiency and economy consult the EF engineers on *your* next furnace job.



The EF "Pan-Dumping" Rotary Furnace pictured above heat treats 250 lbs. per hour of bolts, screws, springs and other small parts economicelly and uniformly. Furnished complete with Quench Tank, Atmosphere Generator and Automatic Controls.

EF

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